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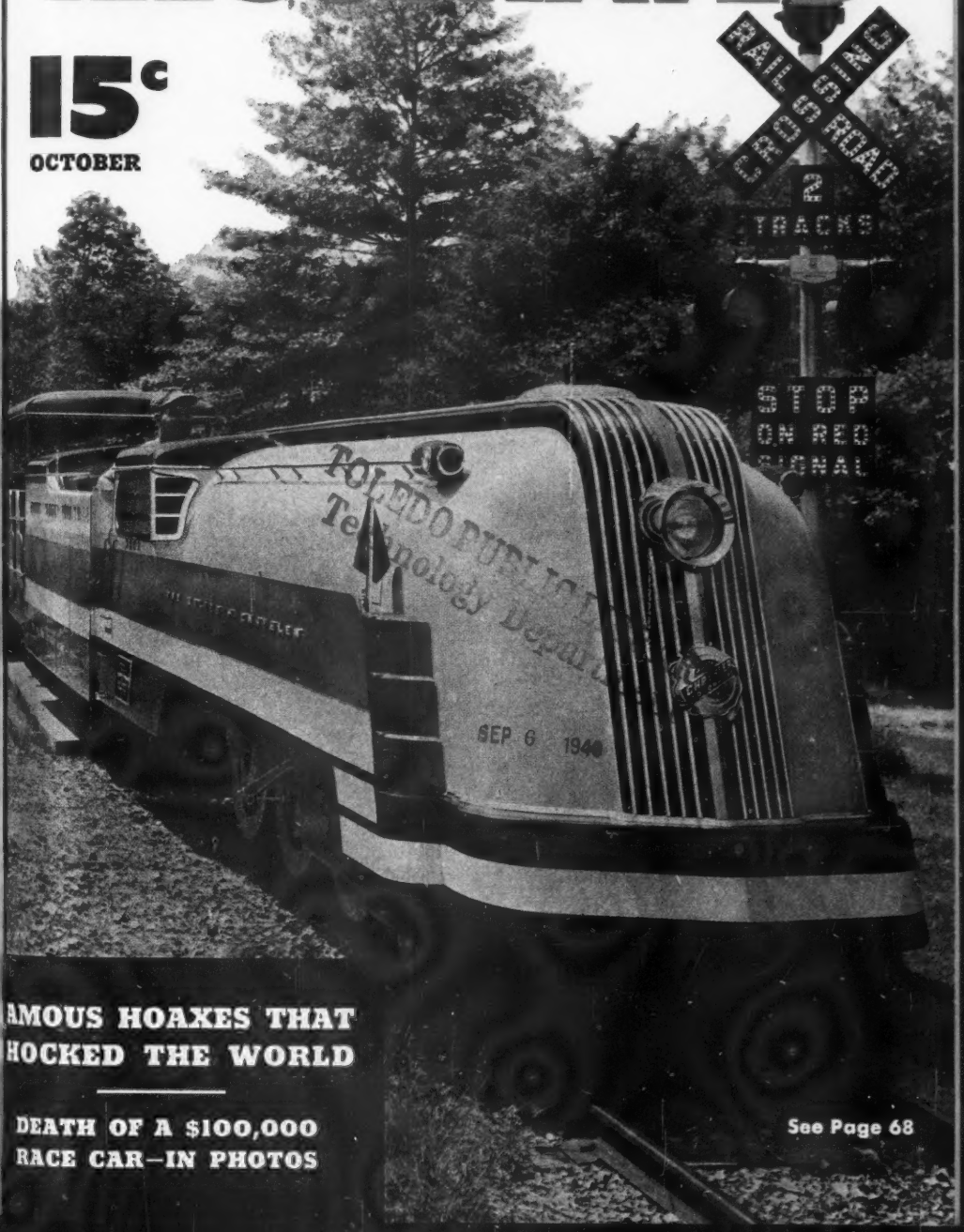

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DEATH OF A $100,000 RACE CAR—IN PHOTOS

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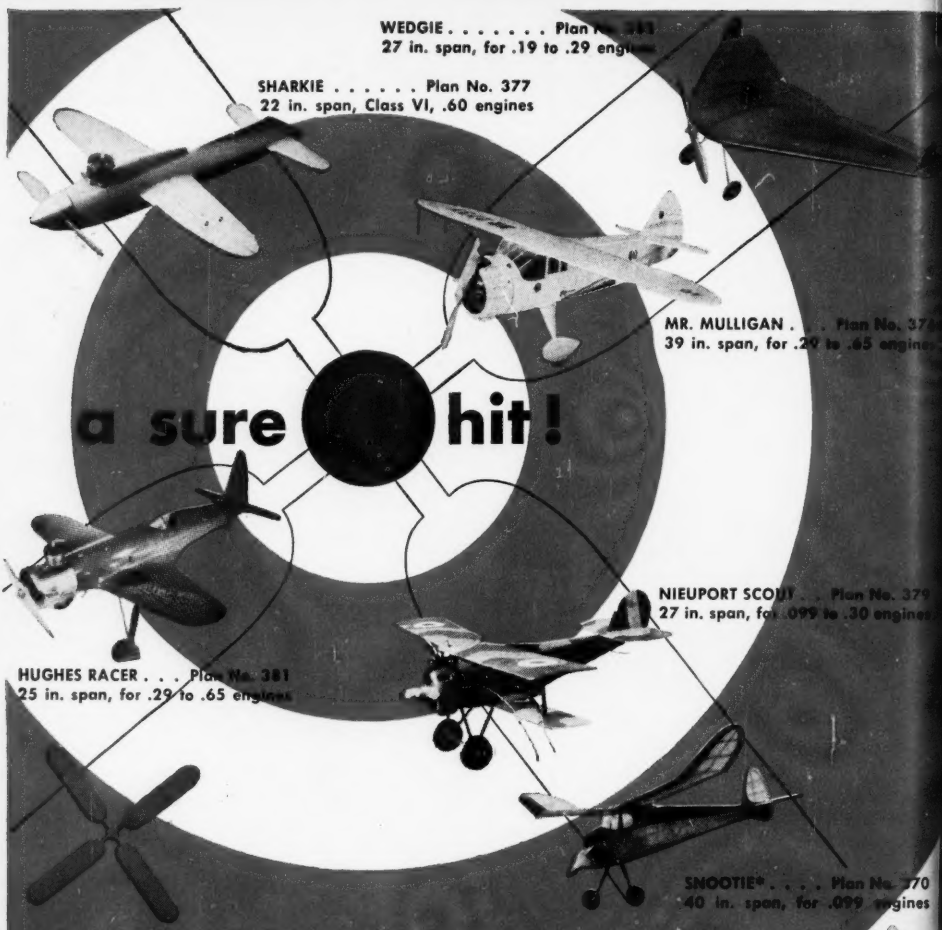

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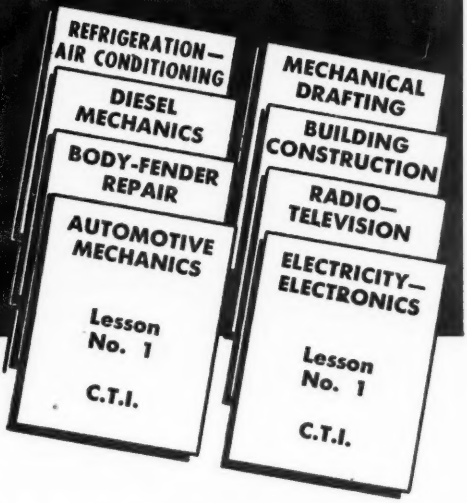

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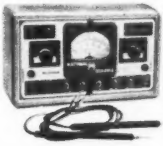

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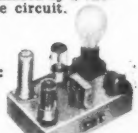

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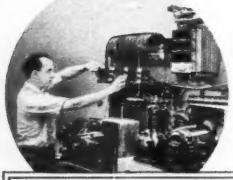

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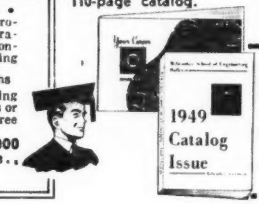

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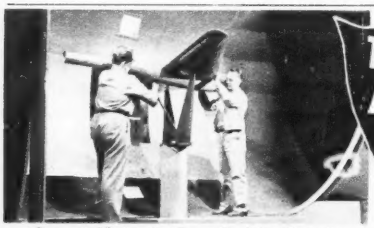

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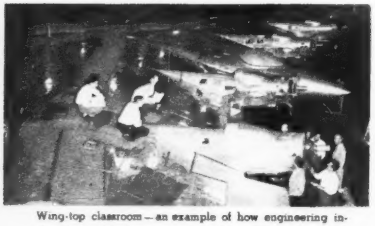

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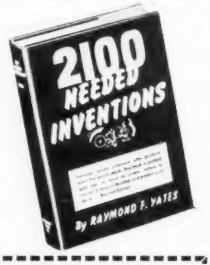

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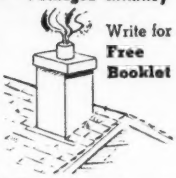

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The Editor's Workbench

MI Feature Editor Gil Paust, a wartime CAP aviation instructor, poses for the camera birdie before taking off in a Piper Clipper to show the sky birdies a few chandelles.

How To Sell a Car

Some Englishmen don't like yours truly too bloomin' much since I had the ruddy audacity to state right here, in the August Workbench, that our British cousins don't know how to sell automobiles. (In the U.S.A., I mean.) I still say they don't. The Limies know how to make wonderful cars but they haven't learned yet how to make people (Americans, I mean) want to buy them.

I know a couple guys who *do* know how to sell cars, though, and their latest stunt is a good example of smart Yankee horse (power) trading—as well as a pretty solid sign that from here on in, we poor buyers can count on getting our favors curried once in a while by the Joes who have stuff to sell. (Gonna miss that Mephistophelean sneer on the salesman's face when you ask him how soon you can get delivery of a new Bugscuffle Six with automatic transmission, automatic steering, automatic parking and automatic monthly installment payments that go on and on?

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—Bill Parker

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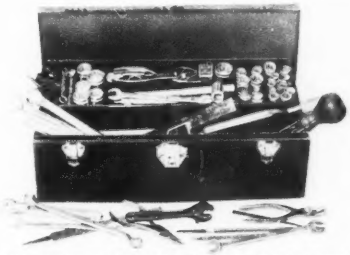

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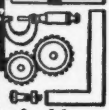

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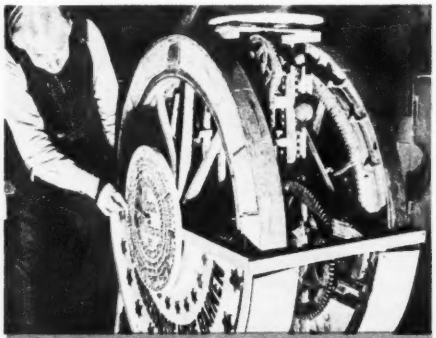
It should be distinctly understood that one argument which is often used—"This cannot be perpetual motion because everything wears out"—does not hold water. The possibility of wear should not enter perpetual motion discussions at all. It's perfectly reasonable to assume that ball or jewelled bearings could be applied to any mechanism to enable it to continue to operate for thousands of years with no appreciable wear.

The amount of power which the mechanism is able to deliver or the speed of its operation is of no importance. A clock requires but little energy to continue to tell time.

Most of the so-called perpetual motion devices are designed by men with little appreciation of the laws of physics. Others fall down because the factor of time is not taken into consideration. Virtually all of the devices which I have seen depend on principles long since discarded because they were not workable.



Thirty-five thousand dollars and 35 years went into the development of this "perpetual motion machine," according to inventor Peter Schultz. Graduated wooden gears are set in motion by heavy wooden balls. The giant apparatus operates the phonograph on top.

Patenting

The inventor can apply for a patent on a perpetual motion mechanism by sending his application with the required Government filing fee. Such an application, however, is not assigned to the examining division. Instead, the inventor is granted one year to produce a working model.

If, in this space of time, he cannot do so, his filing fee will be returned if he asks for it. This, by the way, is the only circumstance under which the Government will return a filing fee to an inventor.

If the applicant produces the machine, motor or other device, his application will go to the examiners and the patent will be issued provided that the idea is new and functional. There must be no secret gimmicks which the inventor has purposely omitted.

If the applicant asks for an examination and gets a rejection because the model did not work, was not submitted, or because the assumed operation was not technically possible, the filing fee is not returned.

Getting Around The Regulations

In spite of the regulations governing these devices, many perpetual motion ideas have been patented under subterfuge. Some were classed as energy transmission mechanisms, at least one as a bicycle, another as a musical instrument and others as motors and the like. Letters sent to the inventors of such devices often get replies to the effect that, because the patents were granted, the Patent Office set its stamp of approval on the perpetual motion systems. Needless to say, such statements are untrue. Of the many designs of this sort which I have examined, there's not one which could have been made to operate. There's not one which the laws controlling physical and other technical phenomena could not prove futile. Incomplete understanding of some of the laws or the application of only a few of them, omitting others of equal or greater importance, is usually the stumbling block.

Modifications

Most of the perpetual motion designs are merely modifications of mechanisms which originated in the 16th and 17th centuries. These might be classed broadly into eight groups:

1. Devices which work by levers, wheels and weights and depend on the fact that the weights on one [*Continued on page* 24]

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Invention Clinic

[*Continued from page* 22]

side are farther from the center than those on the other side, hence are acted on by gravitational forces.

2. Devices which reverse the procedure and supposedly operate by buoyancy in a liquid or gas.
3. Devices which use rolling weights and inclined planes or pools of mercury.
4. Liquid pressure or hydro-pneumatic devices.
5. Devices which use capillary attraction or depression.
6. Those which supposedly employ the force of magnetism.
7. Electrical devices employing physical phenomena or transformation of currents.
8. Miscellaneous groups.

Some of these, in a broad sense, might be classed as perpetual motion devices and actually do function within certain prescribed limits of location or other natural conditions.

Natural Forces

You can purchase a precision clock which never needs winding. It works on the principle that there are always changes in temperature in the atmosphere. It's claimed that a change in temperature of only a degree or two will allow the clock to continue to operate for 24 hours. Because there is scarcely any spot where the temperature does not change more than the amount needed, this clock should continue to run until the parts wear out. But this is *not* perpetual motion. Take this clock into some of our deep salt mines, or anywhere else where the temperature remains fairly constant day and night, and the mechanism will come to an abrupt stop.

A radium clock, on the other hand, would continue to operate for a thousand years or more. In this invention of a famous English scientist, the energy is supplied by radium. Today we know that radium loses about one per cent of its activity in 25 years, so this clock might have a useful life of about 2500 years. But that, too, is not perpetual motion. The energy is included at the start, just as if it were a huge spring.

An earth battery also has been used to operate mechanisms. In this invention, two plates of carbon, or a carbon and a copper plate, are buried at different depths in the earth. The current "collected" is conveyed to the mechanism. Here again the effect will vary from place to place, from time to time. This same reasoning applies to the static motor working on atmospheric electricity.

[*Continued on page* 34]

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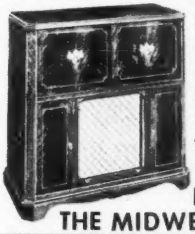

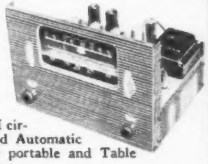

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Could you print a short sketch of Tom McCahill's automotive background?

Francis M. Bevans
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Tom says it all comes naturally for him—his pop was a top executive of Mercedes and one of his earliest toys was a Winton Eight. Since then he's been almost everything in the automotive field—mechanic, engineer, teacher and Army Ordnance inspector. Some years back he even owned a garage in New York (complete with Palm Beach branch) for servicing foreign cars. Now, he's content to make serving MI readers his full-time job

I am not lacking in interest in the opposite sex but when I wish to view cheesecake I'll buy an appropriate magazine. My oldest boy, aged 2½, looks at the pix now and learns a lot by identifying the various machines and inventions. So, how about leaving the babes out?

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We don't go out of our way to insert cheesecake in MI. But what should we do if a shot of a wonderful new invention being tested by a beautiful girl turns up? We believe MI's readers are willing to make the sacrifice—purely in the interests of science, of course.

[Continued on page 33]

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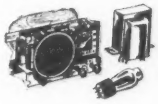

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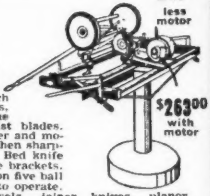

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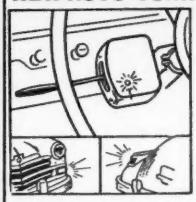

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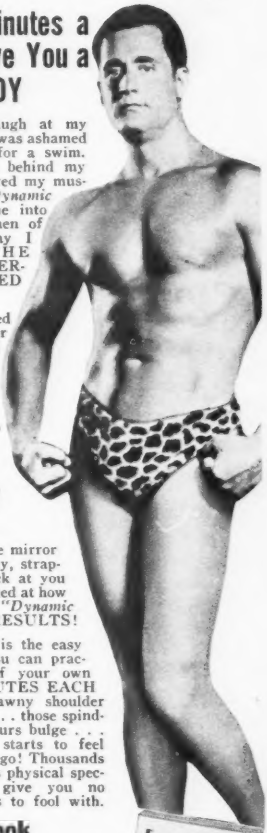

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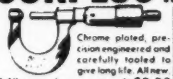

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Dear Editor

[*Continued from page 29*]

British Car Salesmanship

Bill Parker's workbench editorial about salesmanship of English-made cars (August MI) struck home with this writer.

Primarily, the difficulty lies in attitude. As long as the dealer's organization regards the car as "that damn monstrosity" and wonders out loud if anybody "will be sucker enough to buy that thing," the already timid American buyer just won't bite.

H. J. Jensen-Norman, Jr.
Mount Vernon, Wash.

"I Like McCahill" Dept.

I believe if I saw an article about a new war and an article by Tom at the same time, I'd read the latter first.

J. Domopauski
Bay City, Mich.

If you call your magazine McCahill Illustrated, it'll be OK with me.

G. R. Dooley
Roanoke, Va.

"I Hate McCahill" Dept.

Boy, if I couldn't compare cars better, I'd go back to the farm to load the spreader.

Charles P. Gebhart
Christiana, Del.

I would suggest that you devote McCahill's pages to some worthy subject and send him back to the farm—on a one speed jackass.

J. D. Parker
Mesa, Ariz.

Ballots are not yet in from the rural areas.

Wheels in the Balance

Tom McCahill said in his Packard story (August MI) that not one in 50,000 cars have balanced wheels. But Packard, Cadillac, Buick, Oldsmobile, Pontiac, Chrysler, Lincoln and Studebaker balance their wheels during production by attaching lead weights just as described in the story. The catch is that they are attached on the inner side of the rim—probably beyond McCahill's stooping range.

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Invention Clinic

[*Continued from page 24*]

Water and Sun

A modification of the old experiment in physics—the cryophorous—is popular today. It has taken on the form of a bird sitting on the edge of a tumbler full of water. This glass object apparently dips its beak into the water, then returns to an erect position. The operation continues automatically as long as there is any water present and evaporation can take place. Large scale devices operating on this principle have been suggested. They could be made to furnish a small amount of power if set on a float in a river where freezing weather would never be encountered and where rain is not likely to occur.

In many places on the face of this earth, the sun's rays are used directly to furnish power. It may be for the small heat-operated radioscopes found in the windows of optical dealers or for the larger installations on the deserts where the sun's rays are focused on pipes. Here, steam is produced to work low pressure engines. Some experiments have been worked out in the form of photo-electric cells which convert sun power directly into current. But none of the sun-power devices could be made to furnish even the modest energy they now

[*Continued on page 36*]

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[*Continued from page* 34]

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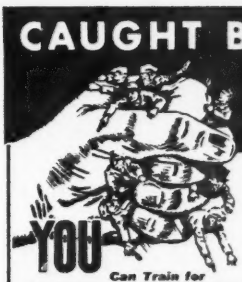

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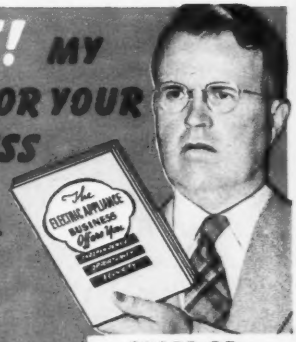

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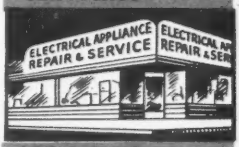

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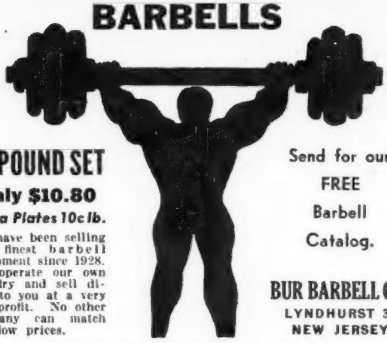

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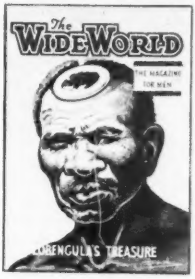

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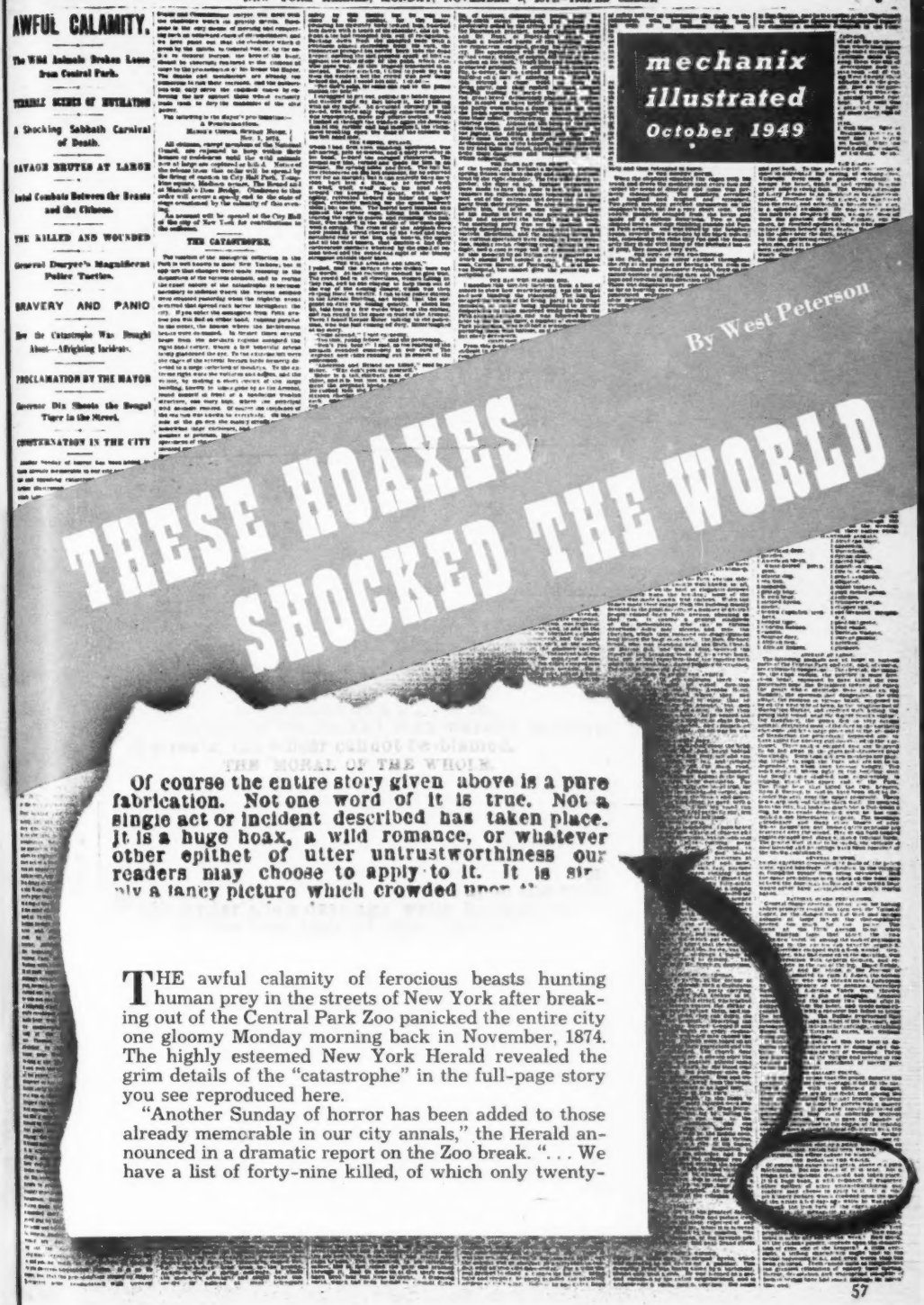

THE awful calamity of ferocious beasts hunting human prey in the streets of New York after breaking out of the Central Park Zoo panicked the entire city one gloomy Monday morning back in November, 1874. The highly esteemed New York Herald revealed the grim details of the "catastrophe" in the full-page story you see reproduced here.

"Another Sunday of horror has been added to those already memorable in our city annals," the Herald announced in a dramatic report on the Zoo break. ". . . We have a list of forty-nine killed, of which only twenty-

Was the bullet-in-the-back death of Jesse James, left, a fantastic hoax for 67 years? The six-shootin' gent (alias Col. J. Frank Dalton on the pension roll), right, says he's that James boy, above.

seven bodies have been identified, and it is much to be feared that this large total of fatalities will be much increased with the return of daylight. The list of multilated, trampled and injured in various ways must reach nearly 200 persons . . . Twelve of the large carnivorous beasts are still at large, their lurking places not being known. . . ."

"All citizens, except members of the National Guard," the Mayor warned in a "state-of-siege" proclamation, "are enjoined to keep within their houses or residences until the wild animals now at large are captured or killed."

"There was evidently a fight over the body of Anderson (the keeper whose unfortunate poke at the rhinoceros had set off all the trouble)," an eyewitness of the catastrophe reported. "But I could see nothing more than a mingling, gleaming mass, whence arose the most awful cries. Nearer to me, where (Keeper) Hyland lay, the lioness, the panther, the puma, and presently the Bengal tiger, were rolling over and over, striking at each other with their mighty paws. The lioness tore the skin off the puma's flank with one blow. The coming of the tiger was something terrible. I shall never forget the awful, splendid look of him as he landed with a spring in the thick of them. I could not move. It was too awful for anything. Oddly enough, while the fight was going on, . . . I could not help looking at Lincoln, the lion, who was standing behind them, pawing and roaring and lashing his sides with his tail.

THE SUN.

Number 615.] NEW YORK, TUESDAY MORNING, AUGUST 21, 1835. [Price One Cent.

PUBLISHED DAILY, by SENJ. H. DAY, Sen. at the corner of Nassau and Spruce streets Opposite City Hall.

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ONE HUND DRED DOLL—$ 100 —Ladies Fur and Satin Bonnet Boxes, at $3, with a fresh assortment of Palm Leaf Hats. Also, a new and fashionable Satin Bonnet Cap, for Ladies, at 75 cents. Satin Bonnet Boxes. Remember J. B. Brightbright, Bonnet, Cap and Hat maker Palace street, Chatham corner of Pearl st.

SILKY HAIR INTRODUCED—A advertisement not to amount HAT for only TWO DOLLARS AND A HALF—HOOK & HARRIS, 95 Broadway, offer to public a substantial and fashionable Hat, for the reduced price of two dollars and a half. These Hats, possessing all superior quality of the best, commanded themselves similarly to the attention of gentlemen who want to wear and look proper, without incurring a great expense. Persons buying Hats would do well to call and look at these articles. 21 Broadway.

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GREAT ASTRONOMICAL DISCOVERIES, LATELY MADE

BY SIR JOHN HERSCHEL, L.L.D. F.R.S. &c.

At the Cape of Good Hope.

[From Supplement to the Edinburgh Journal of Science.]

In this extended edition to our Journal, we have the happiness of making known to the British public, and thence to the whole civilized world, some discoveries in Astronomy which will hold an important ascendency in the age in which we live, and enable upon the present generation of the human race a great distinction through all future time. It has been generally said that the stars of heaven are the hereditary regalia of men as the intellectual sovereigns of the material creation. He was now told the Zealanda around him with a fellow commissioner of his mental supremacy.

It is impossible to contemplate any great Astronomical discovery without being closely allied to a permanent art, and nearly a kin to those with which a departed spirit may be supposed to discover the unknown realities of a future state. Bound by the irresistible laws of nature to the globe on which we live, sensation, "close shut up in mortal expanse," it seems like acquiring a finite supernatural power, to be able to see the remote and mysterious works of the Creator yield tribute to our curiosity. It seems almost a presumptuous assumption of powers denied to us by the decree of, when man, in the pride and confidence of his skill, steps forth far beyond the appointed mental boundary of his contemporaries, and discovers the secrets and familiar habitants of other worlds. We are assured that when the immortal philosopher to whom mankind is indebted for the thrilling wonders now first made known, had to bring his telescope into and tremendous opposition with a certainty of success, he naturally passed several years before he commenced his observations, that he might prepare his own mind for discoveries such as he knew would fill the minds of mortals not his fellow men with astonishment, and render his name a bright and transcendent conjunction with that of his mortal rival, Galileo, to all posterity. And well might he pause! From the hour the first human eye spread their gaze to the glorious of the lesser firmament above them, there has been no accession to human knowledge of all comparable in sublime interest to that which he has lately discovered upon a comparatively, and we are taught to believe that, when a world, already preparing for the prize, is which his discoveries are extended in detail, shall be had before the publick, they will be found of incomparable importance to some of the greatest occasions of civilized life. Well might he pause! He was about to become the sole depository of wonderous secrets which had been hid from the eyes of all men that had preceded him, and of which, if he should be permitted to make a further discovery in our solar system. Several years, however, prior to the death of this wonderful astronomer, he commenced a practicable to construct an improved mirror of particular and spherical reflection which, by uniting all the merit which results in the Gregorian and Newtonian instruments, with the highly interesting achromatic discovery of Dollond, would in a great degree, remove the remainder of objections. His plan evinced the most profound research in optical science, and the most delicate ingenuity in mechanical contrivance; had it succeeded, being obtained, and eventually death, prevented on experimental application. His son, the present Sir John Herschel, who had been trained and credited in the observatory, and a practical astronomer from his boyhood, was so fully convinced of the value of the theory, that he determined upon trying it at whatever cost. Within two years of his father's death, he completed his new apparatus and adapted it to the old mirror was with nearly perfect success. He found that the magnifying power at 6000 times, when applied to the moon, which was the nearest extension that could be selected, produced, under these new reflection, a focal object of exquisite perfection, free from every chromatic aberration, and combining the highest degree of light which the focal extension could collect from that luminary.

The enlargement of the angle of vision which was thus acquired, is ascertained by dividing the moon's distance from the observatory, by the magnifying power of the instrument; and the former being 238,000 miles, and the latter 6000 times, leaves a quotient of 39 miles, as the apparent distance of that planet from the eye of the observer. Now it is well known that no terrestrial objects can be seen at a greater distance than this, with the naked eye, even from the most favorable elevations. The extraordinary effect produced a more distant view than that of with the most acute natural vision, and then the highest mountains, and, if possible, steeples, are at this distance, not themselves elevated in innumerable ridges. It is not probable, however, that the mortary lofty sublime telescopic view of the moon presented to objects with equal distinction, though it did be equal size to those of this earth so remarkably enlarged.

The other Herschel had nevertheless demonstrated that with a power of 1000 times he could discern objects in the satellite of not more than 172 yards in diameter. If therefore the full capability of the instrument had been closing by the new apparatus of reflectors constructed by his son, a world follow in mathematical ratio the objects could be discerned, at not more than 22 yards in diameter. Yet in either case they could be seen as mere dotes, shapeless points, with no greater conspicuity than they would exhibit upon earth to the naked eye at the equal size of these points. But although the difficulty of the mind to conceive of the Herschel particular, are in large

LUNAR ANIMALS

OBJECTS.

Those winged men and women, below, are the strange creatures the fictitious Sir John Herschel "saw" in moon hoax, left.

Thousands fled wildly into the streets or headed west to escape the "Martian invasion of New Jersey" when Orson Welles, right, broadcast his dramatic version of the H. G. Wells novel, War of the Worlds, on Oct. 30, 1938. Listeners thought the men from Mars were actually moving in on them, as depicted in drawing, far right.

every muscle in uneasy tension. All of a sudden I had a flash.

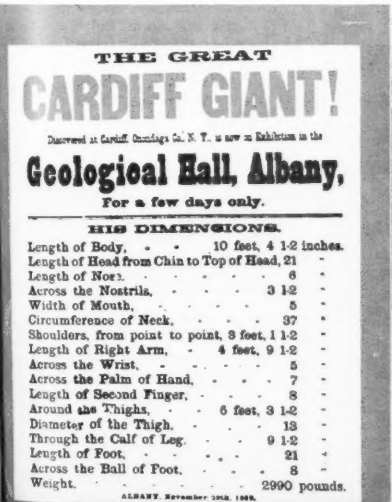
"*'By God, he's looking at me!'* I said to myself. I saw him crouch. I turned and ran. . . .

"I saw a young man fall from a blow of the awful paw, and another crushed to earth beneath the beast's weight. . . ."

Such incidents were typical of the "carnival of death" that was sweeping through the city, according to the Herald. A vast hunt—by armed men for the escaped animals and by the prowling beasts for the escaping victims—was stirring up dramatic conflicts not only in Central Park and on Broadway and Fifth Avenue but even inside cathedrals and churches. A buffalo bowled over Earl Roseberry's carriage in front of the Brevoort Hotel, then rammed into another one. A savage brute, believed to have been a tiger, leaped on board a departing ferryboat at the foot of 23rd Street and sent horses, wagons and passengers plunging overboard.

"It would be impossible at this late hour to describe the numberless scenes of dismay and disaster," the report went on. "The hospitals are full of wounded . . . A sentiment of horror pervades the community."

Life in New York came to an abrupt end as citizens bolted for safety after the Herald broke the "news" about wild animals stalking through the streets. Gotham's residents were afraid to venture forth to



THE GREAT

CARDIFF GIANT!

Discovered at Cardiff, Onondaga Co. N. Y., is now on Exhibition in the

Geological Hall, Albany,

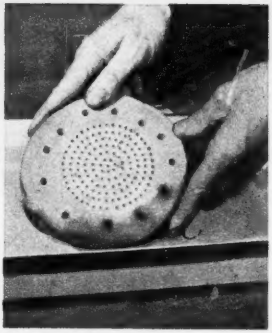
For a few days only.

HIS DIMENSIONS.

Length of Body,	10 feet, 4 1-2 inches.
Length of Head from Chin to Top of Head,	21 "
Length of Nose,	6 "
Across the Nostrils,	3 1-2 "
Width of Mouth,	5 "
Circumference of Neck,	37 "
Shoulders, from point to point,	3 feet, 1 1-2 "
Length of Right Arm,	4 feet, 9 1-2 "
Across the Wrist,	5 "
Across the Palm of Hand,	7 "
Length of Second Finger,	8 "
Around the Thighs,	6 feet, 3 1-2 "
Diameter of the Thigh,	13 "
Through the Calf of Leg,	9 1-2 "
Length of Foot,	21 "
Across the Ball of Foot,	8 "
Weight,	2990 pounds.

ALBANY, November 20th, 1869.

America's leading scientists, and even the great Barnum himself, was hoaxed by this fake figure of a petrified man, which brought the hoaxers fame and fortune as the Cardiff Giant.



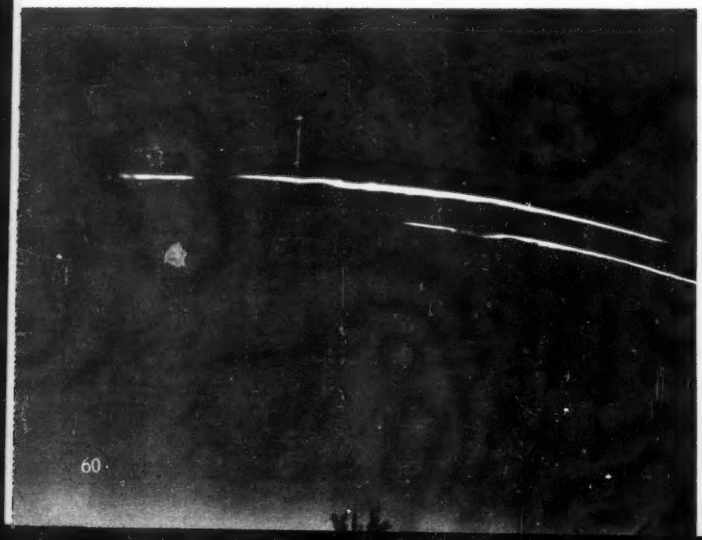
In this cellar lab in his home at Rock Village, Mass., Farmer John Brown claimed he discovered his magic "master cell," shown above—"creator of all life and the universe."

work and hid behind barricaded doors and furniture-barred windows.

It would have been just another morning-after-Sunday Monday if startled readers had held on to their heads till they got down to the final paragraph of the sensational story:

"THE MORAL OF THE WHOLE."

"Of course the entire story given above is a pure fabrication. Not one word of it is true. Not a single act or incident described has taken place. It is a huge hoax, a wild romance, or whatever other epithet of utter untrustworthiness our readers may care to apply to it. It is simply a fancy picture which crowded upon the mind of the writer a few days ago while he was gazing through the iron bars of the cages of the wild animals in the menagerie at Central Park. Yet as each of its horrid but perfectly natural sequences impressed themselves upon his mind, the question presented itself, How is New York prepared to meet such a catastrophe? How easily could it occur any day of the week? How much, let the citizens ponder, depends upon the indiscretion of even one of the keepers? A little oversight, a trifling imprudence might lead to the actual happening of all, and even worse than has been pictured. From causes quite as insignificant the greatest calamities of history have sprung. Horror,



Those streaks across the sky are meant to be "flying saucers," the mysterious whatzits that caused a rash of disc "discoveries," like the one Father Brasky, below, says hit his church with a roar.

Joan Lowell, the young woman shown cleaning up the restaurant table, was the author of Cradle of the Deep, a sensational best-seller in '29, supposedly revealing the true story of her exciting life as the only female aboard a schooner of hardy sailors. Later, skeptics doubted she'd seen more of the sea than revealed in the publicity shot, far right, taken on a ship at dock.

devastation and widespread slaughter of human beings have had small mishaps for parents time and again."

The point to this "huge hoax," this "wild romance," was to stress the need for improving the facilities at the zoo and to show what *might* happen unless the buildings and cages were modernized for greater safety and kept in good repair. But for days gullible Gothamites were too upset trying to save their own hides from the imaginary wild beasts lurking around every street corner to worry about stouter bars anywhere—except around their own homes.

The Herald's fantastic and openly false story about the escape of all the animals from the zoo created almost as much panic on that Monday 75 years ago as would a headline today that an atom bomb had smashed the Empire State Building.

Such deliberate newspaper hoaxes as this zoo yarn were far more common in the "good old days" than they are in 1949. And few of these shockers carried a payoff paragraph at the end—or any hint that the whole story was other than gospel truth.

For instance, let's look back at a remarkable "scientific" story the New York Sun printed in 1835. The article, published in daily installments from August 25 through August 31, was supposed to have been reprinted from the Edinburgh Journal of Science—a publication which, incidentally, did not exist. This serialized hoax, running under the heading "Great Astronomical Discoveries, Lately Made by Sir John Herschel, L.L.D. F.R.S. &c. at the Cape of Good Hope," did as much to boost the Sun's circulation as any love-nest slaying or hammer murder might do a century later.

Sir John headed a group of astronomers who had finally succeeded in setting up a marvellously powerful telescope on the Cape of Good Hope, according to the Sun's report. Through this great instrument he discovered "wondrous secrets which had been hid from the [*Continued on page* 71]

The mummy at the right nearly cost Henry Ford $8,000—as the body of John Wilkes Booth. Ford had one of his men check and found the body belonged to a drug addict who killed himself. Here, Dr. Orlando Scott inspects the hoax, which he acquired after it had gone the rounds of sideshows for many years as the genuine mummy of the man who shot Lincoln.

Spiders Spun

By Louis Hochman

That big Black Widow in the jar has no terror for Mrs. Songer, who finds this "menace" the nicest spider in her parlor.

Her Career

Meet a housewife who lives on the cobwebs in her home—and just loves Black Widows.

"COME into *my* parlor," said Mrs. Nan Songer to the big spider who sidled up beside her at her home in Yucaipa, Calif.

Because she not only refused to follow in Little Miss Muffet's hasty footsteps but invited the spider into her home, the insects now are busy repaying Mrs. Songer for her kindness by spinning her the oddest career in the country—cultivating cobwebs, right in her own home. Every day her brood of more than 50 spiders turn out hundreds of feet of fine silken strands that she sells to manufacturers of precision optical instruments. These clients use the delicate cobwebbing for cross hairs in gunsights, bombsights, surveyor's transits, periscopes, observatory instruments, and other scientific apparatus.

It all started 11 years ago when Mrs. Songer, who was fascinated by the friendly spider, got interested in collecting other spiders and moths, butterflies and crickets. She studied their habits, then reported her findings to the Smithsonian Institution in Washington, D. C. Before she realized it, she had built up a reputation as an authority on bugs.

When war broke out in 1941, the U. S. Bureau of Standards asked her:

"Can you produce high-grade spider web in quantity?"

Mrs. Songer said yes, she could—and has been doing it ever since. Her spiders played a vital part in winning the war on all fronts, since they made it possible to mass-produce optical instruments of great precision.

1 Mrs. Songer gently pulls the Black Widow from a bottle to silk the expensive spinner on top of a soft block of yucca wood.

2 After pinning down the spider with a staple and tickling its spinnerets with a needle, she winds the web on a frame.

3 To check her spider's spinning condition, she dons a pair of homemade magnifying glasses and uses a tin-can light, right.

4

5

6

7

4 That's no weird hubble-bubble the spider woman is smoking but a gimmick for sucking up fruit flies to feed to her charges.

5 Ten wire frames, each spooled with cobwebs, go into special dust-free packing boxes for shipment to manufacturers.

6 Baby sitting for spiders is the chore Mrs. Songer is doing here as she watches the newly hatched ones swarm over the bottle.

7 Using a bottle as a trap, she calmly goes after a spider for another spinning job. Groups of spiders live in that shrubbery.

Today, she has a parlor full of healthy, contented spiders. She keeps them in cloth-covered jars and screened-in cages and segregates those species like the Black Widow, that don't get along well together, into separate bottles. A little dried shrubbery, thrown into each jar, gives the spiders enough support to build their web homes. But this is not the web Mrs. Songer sells. That's drawn directly from the spider at the right time and carefully wound around wire frames for the manufacturer in individual strands up to two inches in length.

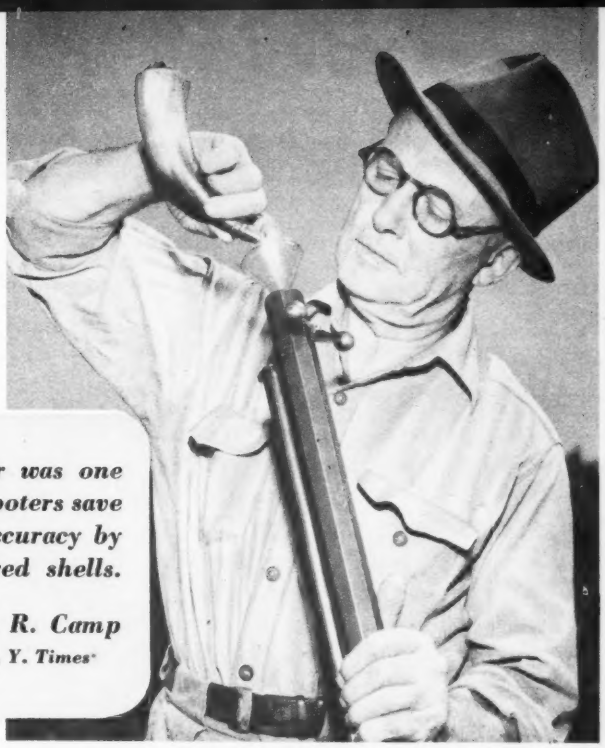
Since most spiders spin brittle, cottony stuff, Mrs. Songer uses only those breeds that yield a strong, elastic web of consistent quality and thickness. Top workers in her spidery are the Golden Garden, the Green Lynx and the Black Widow.

"You needn't be afraid of the Black Widow," she assures. "It's one of the most friendly spiders—never bites you unless it gets hurt. I've handled them for years and never had an accident."

Poisonous or not, Mrs. Songer always handles her spiders with tweezers. She grasps them firmly by the legs but takes care not to pull off their legs.

To milk the spider of its web, Mrs. Songer transfers the creature to a soft yucca block. Then she pins the [*Continued on page* 144]

Charles Ford funnels a charge of black powder into his muzzle loader.



The muzzle loader was one way. Now smart shooters save money and gain accuracy by reloading their fired shells.

By Raymond R. Camp
Gun Editor, N. Y. Times

Why Not Load Your Own?

WHEN you consider the labor, precision and materials involved in the production of a metallic cartridge, the present market price of this commodity is reasonable, but it is still a stiff outlay for the shooter who likes to get out and burn powder.

There is a solution to this problem. During the past few years thousands of shooters have found it, and have discovered that its practice provides a new and interesting angle to the shooting hobby. The answer is —reloading. Through the medium of a moderate outlay for equipment, and the purchase of lead, powder and primers in bulk, you can turn out from five to eight loaded cartridges for the price of one factory round. What's more, the shooter with an urge toward experimentation can increase his shooting pleasure, provided he keeps within the bounds of normal safety procedure.

Any shooter whose rifle employs centerfire cartridges finds that his sport has increased greatly in cost since the war, and the majority are faced with one of two courses: either they must cut down their shooting, or take up reloading. Those unfamiliar with the situation assume that the production-line machinery of the modern arms companies can produce ammunition much cheaper than the home reloader. These shooters fail to consider the fact that cartridge production is slanted toward the one-shot load, and that the cartridge case, the big expense item, can be reloaded many times with complete safety.

Many of the real gun cranks have turned to reloading not to save money, but because by this means they are able to obtain real uniformity and precision, and the same thing has influenced many match shooters. No two rifle barrels are the same, and by experimenting with varied loads and bullets you can determine the load which your particular barrel handles best. This can mean everything to accuracy.

Upon reading the list of steps to be fol-

lowed, you may feel that the time involved is not sufficiently short to justify the saving. However, it is not difficult to turn out 100 reloads in the course of an evening, and if you are using a caliber for which factory loads are 12c each, you have saved about $10. At the same time, you have spent an enjoyable evening, and have provided yourself with 100 rounds of *accurate* ammunition.

Another factor which many do not realize is that even with the modern precision machine, highly-skilled labor and a considerable amount of hand work is still required. Others, having read occasional articles on reloading in some of the outdoor magazines, are awed by the technical knowledge apparently required. This also is a fallacy, for any individual with sufficient technical skill to drive a nail in a board without smashing his thumb can learn to reload his own cartridges in one easy lesson.

The equipment required may seem rather elaborate, but the man who really enjoys shooting and would like to do more of it will find this equipment pays for itself in a couple of months. One tool, with the half-dozen inserts or dies will do most of the work, and you do not have to buy the most expensive one to do a good job.

The majority of home reloaders use lead bullets which they cast themselves, but if you prefer jacketed bullets, these can be obtained at your gun store in large lots at a slight increase in cost. For ordinary shooting, or for most varmint shooting, the lead bullet will prove just as satisfactory and you can always buy a few jacketed bullets for your big game hunting, eliminating a few of the steps normally followed in the reloading procedure.

Let's run through the routine. You have on hand in addition to enough empty cartridge cases, your reloading tool, a few simple, home-made items of equipment which we'll mention as we go along, and the materials required for the job: primers, powder, lead, wax, etc.

First we have the casting of the bullets. An iron skillet will serve for melting the lead, or you can buy an electric unit. If you employ old lead pipe as your source of lead, be sure you skim off the dross and dirt on top of it when molten. Then add one part of tin to every 14 or 15 parts of lead. With a small ladle pour the molten metal into the single or double bullet mould. Count five, then tap the sprue cutter with a wooden mallet; this cuts the base of the bullet to a flat face. Open the mold and tap it with the mallet, letting the bullet or bullets drop on a cloth pad. When you have a sufficient stock of bullets, begin the next step.

This is the lubrication. You can make your own lubricant, using equal parts of paraffin and beeswax thinned lightly with vaseline, or you can buy a prepared lubricant. Take an old pie tin, stand your bullets on their bases in it and pour the melted lubricant into the tin until it is just over the top groove in the bullet. When lubricant has hardened and cooled, you are ready for the next step. Take a cartridge case, cut off the base, and ream the neck with your reloading tool and the correct die, until a bullet passes through it without too much pressure. Press this down over each bullet as it stands in the lubricant until you hit the bottom of the pan. The next bullet will push the first one out of the neck, and so on. This will trim off the excess lubricant.

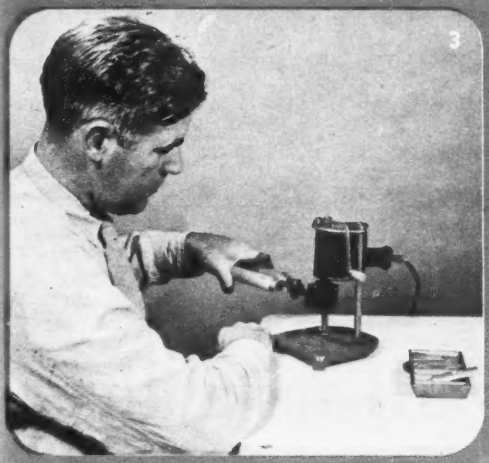
Those who are planning to use light loads will be able to skip the next step, but if you are using high velocity loads, a gas check should be tapped on the base of each bullet, protecting it from the hot gasses. These are tiny copper cups which fit the base of the bullet. To attach them, merely bore a hole the size of the bullet and half as deep in a block of wood. Drop the bullet in this hole nose first, affix the gas check and give it a light tap with the wooden mallet, then shake out the bullet.

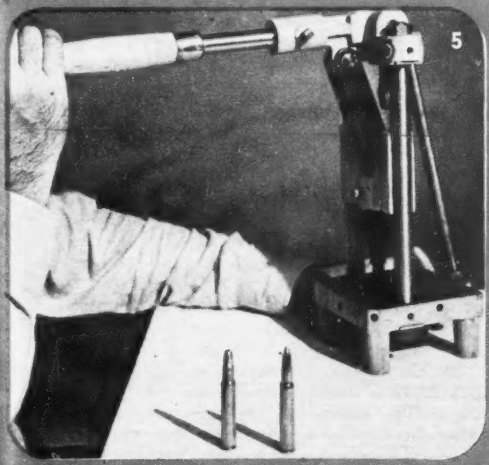
Next is the bullet sizing, to make sure it is the correct diameter. An inexpensive tool can be purchased for this. It is merely a hollow tube with a plunger. The bullet is placed in the tube base-first, and pressed through with the plunger. Once the bullet is started it may be necessary to strike the plunger with the heel of the hand or with the wooden mallet.

Now for the preparation of the case. First insert the decapping die in the reloading tool and begin feeding it fired cases. One operation of the lever removes the old primer. When your primers have been removed, clean the rim of the primer pocket by scraping it with a small knife blade or screwdriver point.

The next step is to "chamfer" the rim of the cartridge case neck. This is quick and simple. A small reaming tool is used, which creates an inside bevel and permits the smooth entrance of the bullet.

Then the priming unit or recapper is used in the reloading tool. Most of these resize the neck of the case at the same time the primer is inserted in the base. The cartridge is now ready for the powder. For a few dollars you can buy a powder measure that [*Continued on page* 87]





1 RELOADING TOOL has a number of dies for removing old primer from shell, resizing neck, inserting new primer and later, seating bullet.

2 WEIGHING each individual charge of powder by scale is still the most accurate method, although inexpensive measurer simplifies the job.

3 LEAD can be melted in an iron skillet, but this electric pot is nicer. Handle lifts to pour lead into mold, in left hand in photo.

4 BULLETS are ready after a few seconds. Cutter slices off their ends, then handle is opened and tapping with wooden mallet jars them loose.

5 SEATING is done by reloading tool. Jacketed bullets can be purchased ready-made if desired. Compare reload, left, with factory load, right.

Equipment courtesy Hoppe's, N.Y.C.

COVER STORY

Chrysler Builds a Locomotive

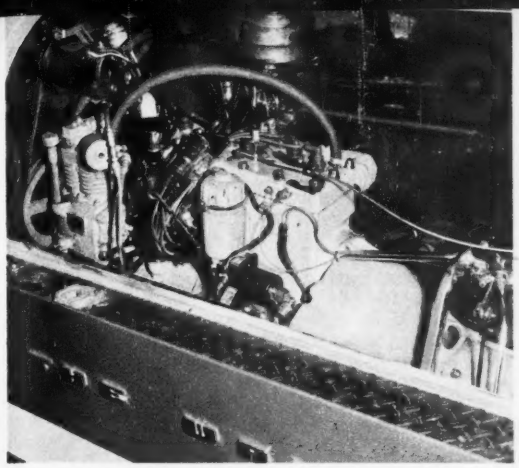
JUST in case MI's cover caused some worry among American Locomotive Company officials let's reassure them. Chrysler is not going into competition with them! The locomotive and tender on these pages is strictly a miniature—one-third regular size, nearly 27 feet long.

How did it all come about? Well, remember that the founder of the Chrysler Corporation, Walter P. Chrysler, got his start aworkin' on the railroad. So, when the locomotives at the Detroit Zoological Park Railroad began to become outmoded, Chrysler Corporation offered to develop a completely new design and power plant. The result is a trim eight-ton miniature—The Walter P. Chrysler.

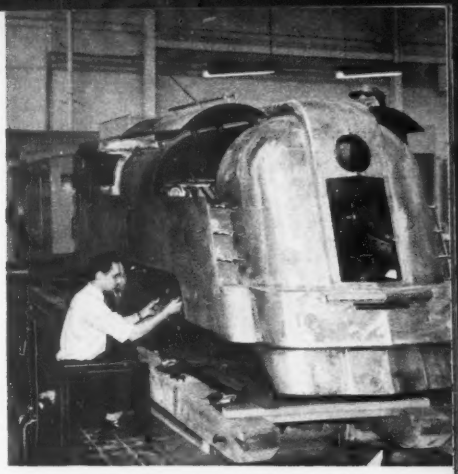
The job was assigned to the Engineering Division and all the departments—Art, Development and Road Test—helped out. The power plant is a Chrysler (what else) six-cylinder automobile engine with fluid drive and hydraulic transmission. It can make about 25 mph and has a standard Chrysler cooling system. Wheels are equipped with taper roller bearings—the old bronze journal boxes have been eliminated.

The operator sits in the tender and the throttle, brake and horn controls are located on the armrest of his chair. Secondary controls are on the instrument panel on the after section of the cab, directly in front of the driver. It has some interesting safety features, too. If the engine is uncoupled, the ignition is immediately cut off. If any car becomes uncoupled, its brakes are set automatically.

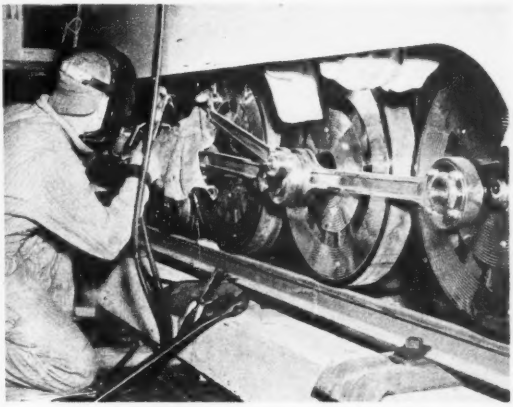
This locomotive has been so successful that Chrysler has now offered to redesign the balance of the trains in use. Zoo officials figure that their little 2½-mile railroad will then be the most modern in the world. •



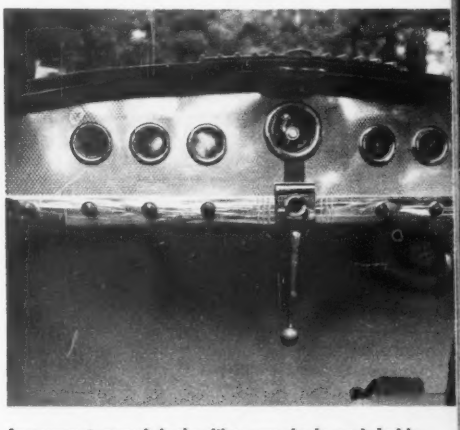
Power plant of the miniature locomotive is a 114-hp. six-cylinder Chrysler automobile engine.



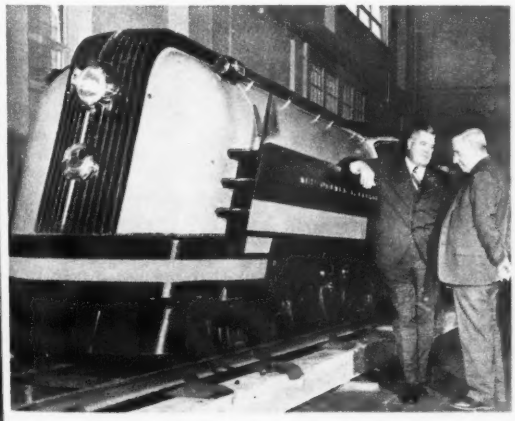
Rear wheels, driven through the axle, drive the other two wheels. The fuel tank holds 30 gallons.



Engineering Division eliminated bronze journal boxes and equipped wheels with roller bearings.



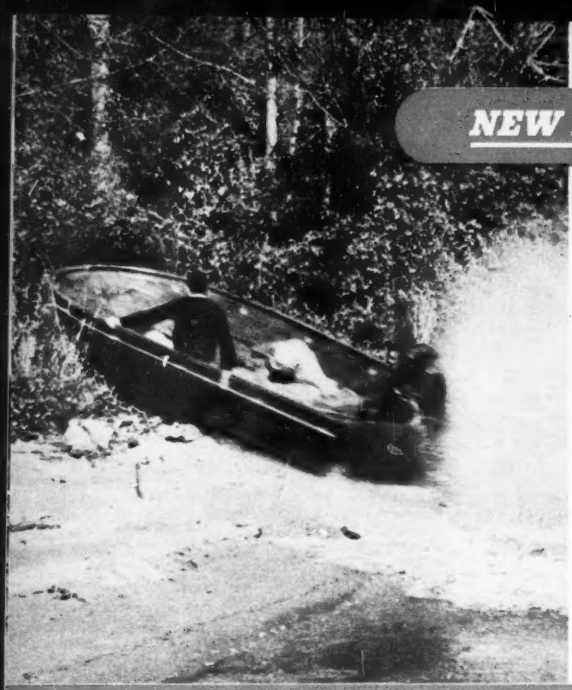
Instrument panel looks like car dash and holds secondary controls such as oil and fuel gauges.



Here's Chrysler's K. T. Keller leaning on the locomotive as he presents it to Zoo Director McInnis.

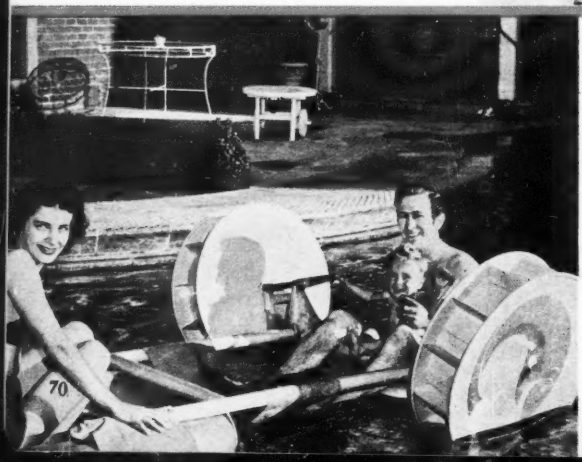
Loaded on a trailer, it's delivered to Detroit Zoo where a million persons ride the trains every year.

NEW in SCIENCE



Glass Boat is a Fiberglas-reinforced plastic assault craft which the Army is putting through rigid tests at Fort Belvoir. It weighs less than 300 pounds and carries 15 men. A World War II plywood craft of the same type weighed over 400 pounds and carried only 12 men. The propulsion unit of this new attack weapon is a neat 33-hp outboard engine.

Private Ear is a novel pocket radio which weighs less than six ounces. Reception is through a small earphone with an ear-plug attachment. The radio, which operates on self-contained flashlight batteries, is equipped with a built-in telescopic antenna and has a 50-mile daytime range. It's only about two inches wide and six inches long. Here, Mrs. Ruth Goetze does her household chores while listening to her favorite program. Electronics Systems Corp., 112 West 18th St., Kansas City, Mo.



Gazook is a versatile swimboat which can be used for fun or transportation. In an emergency, it can even become an efficient life-saving device. Made of an aluminum tubing framework supported by two heavy-duty truck tubes, it's propelled by two paddle wheels driven by hand cranks. Canvas seats are provided for three persons but it'll support six in the water. Gazook, 2720 Queen St., Los Angeles.

These Hoaxes Shocked the World

[*Continued from page* 61]

eyes of all men that had lived since the birth of time." Most amazing of these wonders was the revelation of life on the moon.

Far from being a barren, uninhabited planet, the moon had strange, lush vegetation, weird animals with hairy masks to guard their eyes against glare—and winged men and women! These happy little lunar people, who stood scarcely four feet high, wore no clothes. Their bodies, though, were covered with a bear-like (!) fur and when they landed on the ground, they walked "in an erect and dignified manner."

The Sun's vivid account of lunar life created a sensation not only among the suckers of that day but also among the scientists throughout the world. After the final installment on the moon story, the Sun published an illustrated booklet on Sir John's discoveries. The reprint became a runaway best-seller. For months anyone who *disputed the story* was considered merely a sore-headed crackpot—a real "lunatic."

But rival publishers, jealous of the Sun's booming circulation, began checking on the story and eventually disclosed that the "great discoveries" were simply a terrifically tall tale. A young reporter sitting right in the Sun office had cooked up Sir John, his telescope and all his astounding "observations" about the strange life on the moon.

It took Orson Welles, though, to show that the radio is a hundred times more effective than a newspaper in scaring people out of their wits. Like the zoo hoax in the Herald many years before, his Martian broadcast carried an explanation—which also was ignored, as was that final paragraph in the animal fantasy.

Welles' Mercury Theater production went on the air in a Halloween spirit on the night of Sunday, October 30, 1938. This bogey broadcast, a dramatization of The War of the Worlds, written by H. G. Wells and published in 1898, described how men from Mars invaded the earth. But this thriller had been brought up to date, and the locale shifted from England to the United States.

Welles carefully explained all this in an announcement at the beginning of the program. Apparently a lot of listeners paid no attention. Others—thousands of them—tuned in late and heard shocking statements delivered in a breathless newscast style:

"Flash! Meteor reported landing near Grover's Mill, N. J. . . . Fifteen hundred killed. . . . No, it's not a meteor—it's a flying metallic cylinder. . . . Poison gas is sweeping over New Jersey. . . . The invaders are flying over the nation, raining bombs. . . . The Martians are using death rays. . . ."

Hysteria broke out over the entire country. The bravest of the listeners grabbed shotguns and rifles and headed for the "scene of the invasion" to do battle. All over the country people flocked into churches to pray.

It took a long time for the radio and the newspapers to end the nation-wide panic.

Then last winter another broadcast version of the invasion-from-Mars story sent the citizens of Quito, Ecuador, fleeing into the streets. The enraged residents wrecked the radio station and a newspaper plant and set the buildings ablaze. Before troops restored order, 21 persons had lost their lives in the panic.

Quite a different kind of a hoax—and possibly the most notorious since the ancient Greeks pulled their classic trick of loading troops into a big wooden horse to enter Troy and capture the besieged city—was the Cardiff Giant. This monstrosity, the figure of a man 10 feet tall and four feet wide, was excavated at a depth of five feet by well-diggers on the farm of Abe Newell near Cardiff, N. Y., and introduced to a credulous public in 1899.

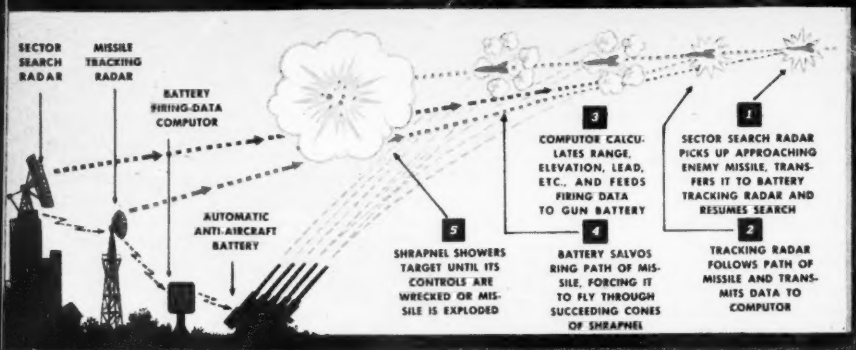
Newell lost no time in cashing in on the publicity. He erected a tent over the mammoth, then charged 50 cents a look to the thousands of curious who stormed his property for a glimpse at the colossus. Later the figure was exhibited to great crowds at nearby Syracuse.

The leading scientists began a heated guessing game that soon made the Cardiff Giant the most famous figure in America. Doctors said the giant was the petrified remains of a Goliath who existed hundreds or thousands of years ago. Others said it was a gypsum statue that must have been buried by Jesuit priests back about the year 1600.

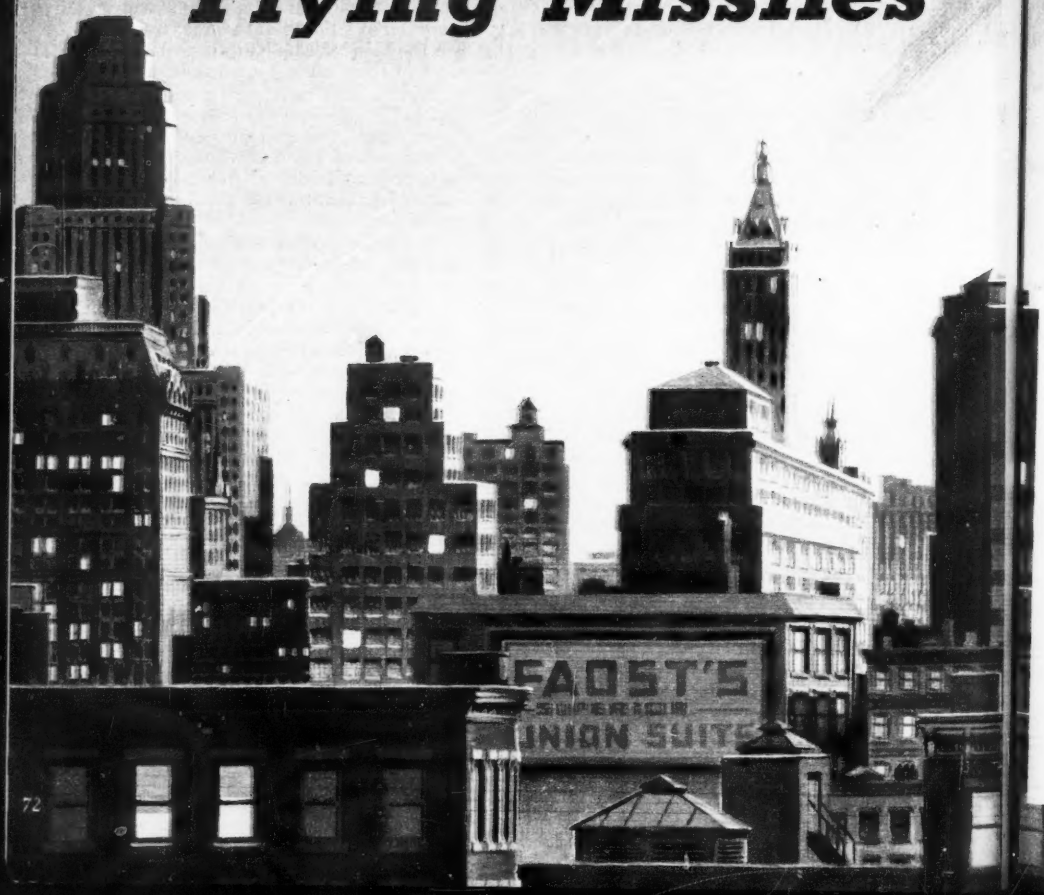
A skeptical paleontology professor (expert on fossils) at Yale, O. C. Marsh, pricked the bubble. He called the mammoth a fraud—merely a modern statue—and not a very good one at that. Since the figure was made of soluble gypsum, the professor pointed out that it would have dissolved completely after a few years in the very damp soil on the Newell farm.

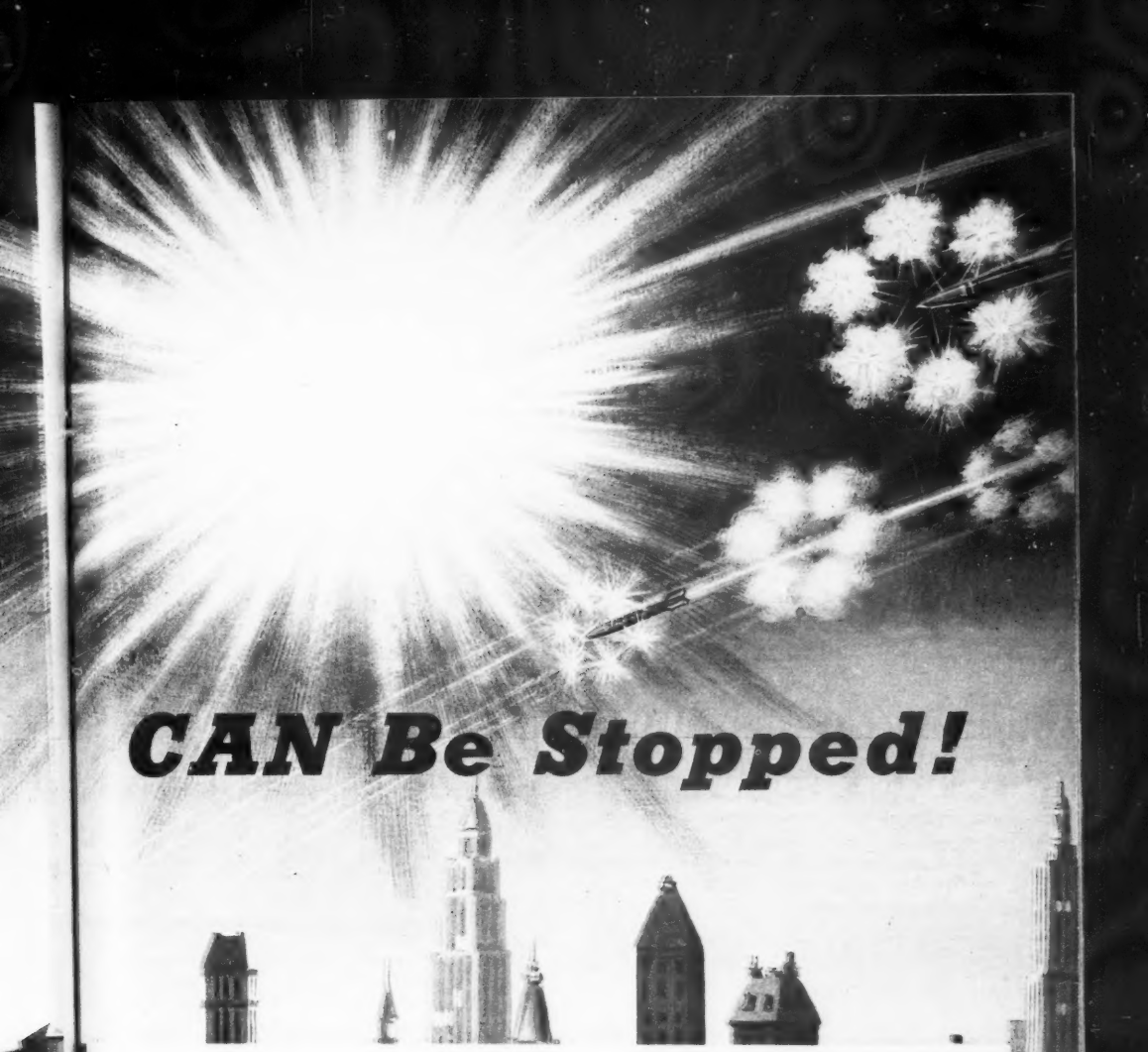
As it turned out, the Cardiff Giant was the work of a Chicago stonecutter hired to do the job by George Hull, a relative of Newell. Hull got the idea for the monster not only to make money but also to confute a minister with whom he had an argument about the existence of giants in Biblical times.

[*Continued on page* 81]



Flying Missiles





CAN Be Stopped!

Here is a sure-fire plan to down supersonic rockets like ducks—and wipe out the terror of sneak attacks.

By Frank Tinsley

HITLER was right when he ranted about the fearful havoc a "secret weapon" would wreak on his enemies. His V-2 rockets unleashed such terror on battered Britain that they nearly won the war—for the Nazis. For there was absolutely no defense against these mighty 3500-mph missiles—and no way to tell when—or where—they would strike next.

Today our military experts are still searching frantically for a weapon to kill the terrible menace of the V-2 type missile. Rocket specialists are concentrating on ground-to-air projectiles to intercept and destroy enemy rockets. But the experts admit that practical development of mechanical minute-men is years away. Right now, we are as wide open as a blind, broken-armed boxer—with *still* no defense against the knockout punch of the flying missile.

But even with the old ack-ack guns of World War II, high-flying supersonic missiles *can* be stopped. Here's how we could set up a sure-

This rare World War II picture reveals a dramatic attempt by the British to shoot down a buzz-bomb.

Flaming shadows, like this Nazi V-1 blitzing down on Britain, are still a dire threat—to the U. S.

fire anti-missile system this very moment:

An enemy wants to blitz a key target—such as New York. Unlike wartime London, with rocket-launching sites just across the narrow English Channel, New York would be vulnerable only to long-range missiles—from another continent or—more probably—from rocket-firing subs off the coast.

Search radars—girding New York by ship and by high points from the outer tip of Long Island through northern Connecticut and the Catskills, then south and east around New Jersey—would warn of the attack and track the oncoming missiles. The nearest radar ship or station flashes by telemeter the exact bearing and position of each missile to the closest ack-ack batteries.

A central electronic brain controls the distribution of targets among the guns. Radars attached to every battery track the assigned target and keep close tab on the missile's precise speed and trajectory. Instantaneous battery computors figure the lead, wind allowance and time of the shells to intercept the rocket. Then, based on these calculations, the guns point and fire the instant the target comes in range. As each salvo roars out to ring a missile, the computors pick a new aiming point for the guns and set 'em up for the next blast.

Proximity fuses explode the anti-missile shells when they're within lethal range of the target. When the shells go off, hardened steel balls hurl forward in overlapping cones so that the blasting projectiles form a circular, shotgun pattern, densest in the center. This deadly shrapnel wrecks the missile's delicate mechanisms, throws it out of control or explodes it in midair.

Basis for this anti-guided missile setup is the recently revealed plan General Sir Frederick Pile, chief of Britain's anti-aircraft defenses during the war, developed in the hope of combatting the V-2.

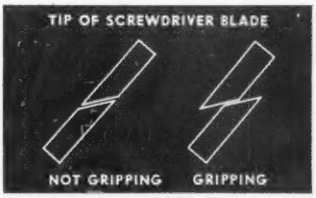
Pile's ingenious plan won the approval of Britain's War Ministry in March, 1945, and might have checked the V-2 campaign. Before he could set up his system, however, the invading Allies overran the Nazis' launching areas in France and Holland and cleaned out the V-2 bases. The plan then was buried away with other top secrets in the British war office.

To prevent surprise atomic attacks, defense rings could be maintained around every important target area in the United States. The cost in money, time and effort, of course, would be huge—but not so staggering as the destruction and panic that may hit our vital centers if they remain sitting ducks for rocket attacks. So, till our missile men finally do perfect those long-range counter-rockets, it's comforting to know that we *can* stop flying missiles—with the equipment we have on hand today. •

THIS MONTH'S

prize gadget

Screw-Gripping Screwdriver



"MY third hand" is what G. W. Barlow calls his screw-gripping screwdriver. For years he groped around his greasy auto-garage floor searching for lost screws and bolts which slipped out of his two-handed grasp. Then he got hopping mad.

There must be some way to hold a screw on the end of a screwdriver, he thought. He'd seen lots of Rube Goldberg devices—gadgets that used everything from magnets to coiled springs to grip the screw. But when the right idea came to him it was so simple he was afraid it wasn't going to work.

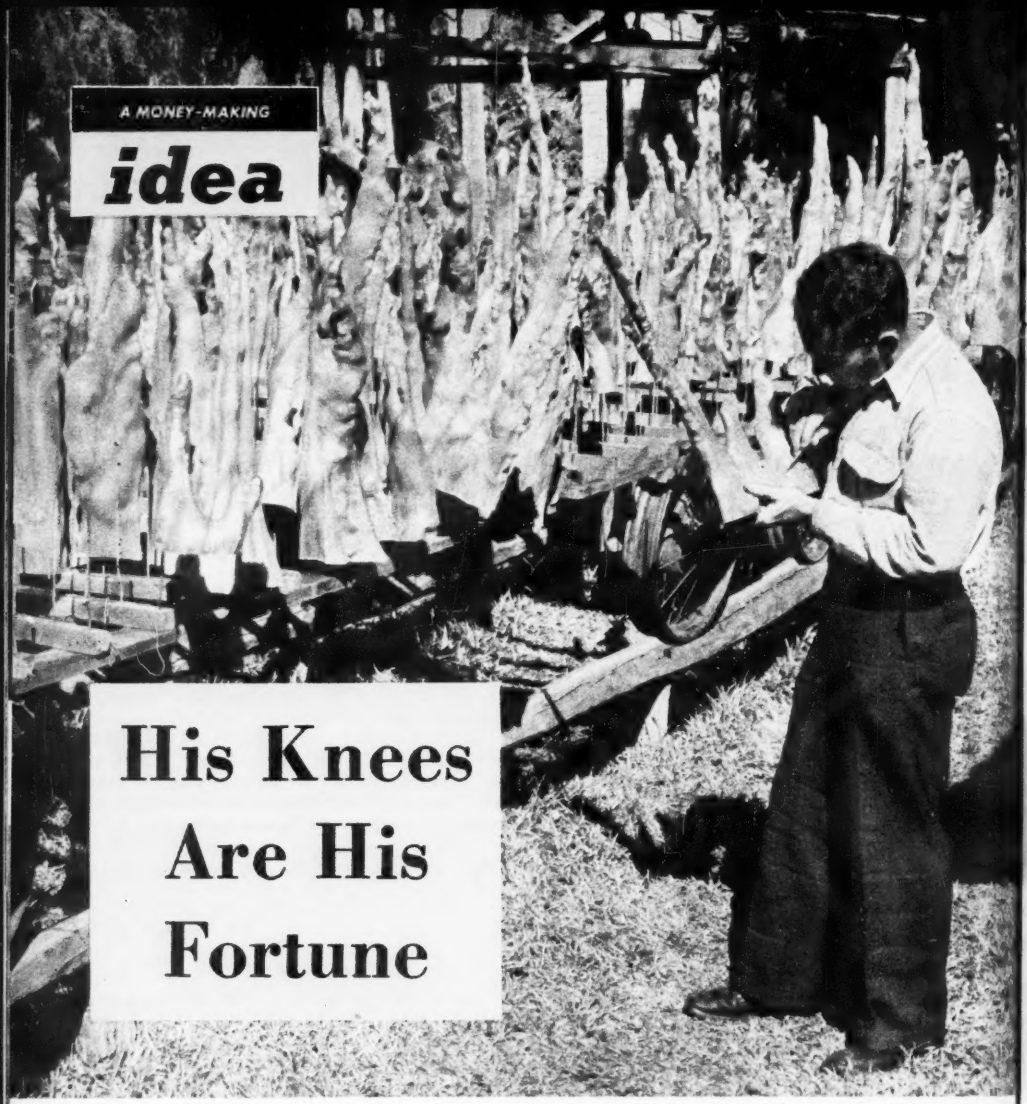
He went to the five and ten cent store and bought a cheap screwdriver. Then, he cut off the blade and in its place brazed two pieces of half-round piano wire of the same diameter. After some experimenting, he found the correct angle for grinding the blades and slipped a tube over them. The pressure of the tube caused the blades to slip over each other, thus wedging themselves in the screw slot.

And there it was—the screw-gripping screwdriver he'd been dreaming of. And here it is, Mr. Barlow—MI's $50 Prize Gadget Award for October. •

Standard equipment is what G. W. Barlow, left, hopes his new screwdrivers will be as he turns 'em out, below, in workshop.

WIN $50

Dreamed up a neat gadget? If you're pretty keen about that pet project of yours, get busy and work it out in your shop. Then send pictures and a description of your invention to the Gadget Editor, Mechanix Illustrated, 67 West 44th Street, New York 18, N. Y. Each month the best entry, in the opinion of MI's editors, will be awarded a cash prize of $50.



A MONEY-MAKING

idea

His Knees Are His Fortune

By Frank Rose

Here's Thomas Gaskins taking a cart full of knees out for a sunbath. They're cypress knees, though.

THOMAS Gaskins of Palmdale, Fla., spends a good part of his time looking for unusual knees—and his wife doesn't mind a bit! In fact, she encourages him.

However, the knees he's seeking are not the Grable-type that adorn the female form. They're the exotic growths that spring up from the roots of the cypress tree.

It all started back in 1934. Gaskins was fed up with his job as salesman for a chemical company. He wanted a business of his own, but he couldn't hit upon anything that suited his limited capital.

On weekends, he escaped from his job by hunting and fishing in the mysterious jungle-like swamps west of Lake Okeechobee in Florida. Sometimes walking and sometimes paddling his home-made dugout canoe, he explored the wild country. On these trips, he was constantly startled by the strange shapes and incredible beauty of many of the cypress knees that stuck out of the ground.

One day, inspiration hit him smack between the eyes. He had always been an adept whittler and he loved to work with

That's not firewood he's carrying in from the swamp. It's a piece of precious cypress booty.

Some knees can be peeled in a few minutes with a sharp knife. Under bark is the strange grain.

Mrs. Gaskins is in the business, too. Here, she takes notes for their records of unusual knees.

Exotic is the word for this cypress-knee lamp. Gaskins makes vases, pipe racks and book ends, too.

tools. Perhaps, here in the woods, nature had provided him with the raw material for the new business he was seeking!

On the next trip, he took an axe along with him, cut several of the more interesting specimens and took them home. Carefully, he peeled off the bark from one of the knees. Underneath, he discovered a richness of color and a beauty of grain that fairly took his breath away. He knew then that he had found his life's work, and several weeks later he quit his job. With his wife Virginia he moved into the cypress swamps where he built a home with his own hands.

Here they lived in pioneer fashion with no modern facilities, while Gaskins gathered hundreds of unusual knees. After peeling off the bark, he hollowed them out with drills and chisels and made them into flower vases, bookends, lamp bases, pipe racks and other similar items. When he had several hundred items in stock, Gaskins placed a large cypress knee as a sign on the near-by highway U. S. 27. On it he carved Emerson's words: [*Continued on page* 142]

Lobbyist for Hobbyists

"You need a hobby," warned the doctor. So Dave Elman dug up more than 500,000 pastimes—for other people.

Little Annette Avers, left, says her snakes are ever so friendly—but Elman is just as happy a big screen separated them during her broadcast.

By Fred Horsley

"PICK any noun in the dictionary, and I'll name you a hobby for that word," Dave Elman, the originator of radio's Hobby Lobby, boasted as he leaned back in his office chair in midtown Manhattan.

"All right," I said and opened up a small dictionary on his desk. "Here's one for you—*auk*."

"That's easy. I've got that hobby right here in the office. Ned Hand of the American Museum of Natural History collects the remains of auks as his hobby. See those bones over in the corner? That's your auk hobby."

"Well, here's a slippery one for you—*eel*."

Dan Mannix, left, a writer, tells Dave's radio fans about a rare hobby—taming Aguila, the bald eagle on his arm, and training her like a falcon.

Elman takes a gander at a real "punkin head"—one of the bright-faced pumpkins that John M. Cz of Madison, O., grows to make 'em look like men.

$50,000 wouldn't buy this fancy fur. It's made of the near-extinct duck-billed platypus, whose skins Tom Peterson, left, of Australia, collects for fun.

Auburn Taylor, a Charleston, W. Va., press foreman, shows Dave how his pants-puller-upper hoists 'em up. He spent two years on this "timesaver."

"Know a guy down in Florida who makes a hobby of electric eels. Spends all his spare time trying to find out just how much voltage one of those shocking fish can put out."

"That's not bad so far, Dave, but who do you know that makes a hobby of *eggshells*?"

"Believe it or not, there's a lady out in Milwaukee who makes lovely pictures out of eggshells. She saves all her broken shells, then arranges them on canvas in pretty pictures."

"I don't think anybody could do much with an old potato besides putting it in a pot. How about *potato*?"

Collecting woodpecker holes from giant cacti is the odd pastime that put Ernest R. Hall of Salome, Ariz., on Hobby Lobby with a trunk full of "holes."

When fire-eating Laurence Kaufman displayed his sizzling-hot hobby on Elman's show, he practically caused a three-alarmer every time he breathed.

CONTINUED ON NEXT PAGE

Dave pulled his chubby chin a second, then grinned like a cherub.

"Got just the man for you. Louis Strakes, a former Manhattan restaurant man, carves faces from potatoes. Does a fine job, too."

"Well, Dave, this one is going to spoil your perfect score—*zero*."

"Zero's a tough word but even on nothing I can give you something for a hobby. I had an Army officer from Fort Monmouth, N. J., on my show not long ago. His hobby was not merely *zero* but *absolute zero*. He was trying to find out whether he could get anything all the way down to zero cold. Theoretically, that's minus 459.6 degrees Fahrenheit. He hadn't quite made it yet, but he was having lots of fun trying."

I was surprised that anyone could make good on such a fantastic boast. Later, when I found that Elman had carefully catalogued more than half a million hobbies in the overflowing files lining his big Madison Avenue offices, it was no longer so amazing that he could name a hobby for any noun you picked out of the dictionary. If Elman used all the hobby material he has stowed about his offices, he could keep running his weekly radio program for more than 400 years without ever repeating a single hobby.

As if he didn't have enough hobbies already on hand, every week some 4000 hobbyists send him not only letters but samples of their hobbies, which may be anything from soap bubbles to bombs. Being a considerate fellow, he doesn't want to throw away some item a hobbyist has spent years creating or collecting. Dave's problem now is not finding hobbies but figuring what to do about all the material that keeps filling up his hobby warehouse and flooding him out of his home and his office.

In Elman's 49 years on earth he has collected some 550,000 odds and ends from other people's spare-time activity. Yet he would gladly give away this entire collection just to have seven worn-out toothbrushes again. For these long-lost molar scrubbers marked his debut in show business.

When he was six, the "doctor" in a medicine show stopping in Fargo, N. D., picked Dave from the sidewalk audience to demonstrate a miraculous tooth-powder that cured everything from rheumatism to fallen arches. Because of Dave's successful demonstration he was hired to be the model for the show's seven-day stand. Elman says his payoff was seven battered toothbrushes and "the awfullest gob of penny candy you ever saw in your life."

After doing a number of small parts in the local theater, he was told to quit the theater or leave school. At sixteen he finally left school for a tent show. He has been a professional entertainer ever since, playing everything from showboats to burlesque before he wound up behind a microphone.

In 1937 Dave's oldest boy, eight-year-old Jackie, suddenly died of pneumonia. For two weeks he was too upset by his grief to concentrate on anything but the tragedy of his loss. Finally Dave's doctor told him he would lose his mind if he didn't pull himself together. The doctor urged him to throw himself into a hobby.

"I went home and got out a book on hobbies," Dave recalled. "I tried to skim through the first chapters, but I found my mind wandering again. The book was all about stamps, coins and the usual prosaic collecting hobbies. I got so disgusted with the boring stuff, I threw the book against the wall and swore I could dig up more interesting hobbies myself. I used to clip newspaper items that caught my fancy and put them in scrapbooks. I remembered seeing a story about a man whose hobby was angle worms. I started going through the old clippings. Next thing I knew, it was six hours later and I still hadn't found the angle worm piece. Then I realized that for the first time since my son's death, I had been absorbed in what I was doing—and that I had found my own hobby in other people's hobbies."

The following day Elman began hunting in earnest for newspaper and magazine stories about people with remarkable hobbies. The New York Times and the Herald Tribune gave him permission to search their morgues for more clues to absorbing pastimes. When he had collected some 300 stories on outstanding hobbyists, he got the idea for a radio program.

"I wanted a show that would stimulate the spare-time activities of others so that their lives would be fuller, richer and more meaningful. I wanted to put on that show real, normal people who were enriching their lives with purposeful but fun-producing hobbies—and I wanted to pass on their hobbies to others. That's how Hobby Lobby started—with each hobbyist lobbying for his own hobby."

After a tryout on WOR, Hobby Lobby soon changed from an experimental sustaining program to a nationwide commercial feature. Hobby Lobby became the first successful hobby show, although more than 500 had been tried and found wanting.

To make up a show, Elman and his staff screen the most likely letters in his weekly mail and check the office files for seven or eight unusual but varied hobbyists. After he has made a selection, he phones or wires

the hobbyists and has them come to New York as his guests, at his expense.

The hobbies for which Dave lobbies on the air range from serious and profitable pastimes to such amusing trivialities as organizing a Union for Abused Husbands, or dreaming up a Rube Goldberg machine for pulling up pants.

But whether the hobby is silly or serious, Dave's radio audiences seem to have almost as much fun as the hobbyists. His Hooper rating has been as high as 17. That means his listeners were estimated at more than 17,000,000. His transcribed programs are rebroadcast not only in Canada but even in faraway Africa.

A lot of queer hobbies give satisfaction to no one but the hobbyist, who doesn't think his particular avocation strange at all. Take Mrs. J. B. Clopton, an Alabama schoolteacher, who paints on cobwebs. She got the idea from reading about an European family who did that delicate artwork. It took Mrs. Clopton two years and several hundred webs to produce her first picture on a cobweb. She exhibited 17 of them to the studio audience, however, when she appeared on Hobby Lobby. According to Dave, those cobweb landscapes and portraits were really beautiful.

Annette Avers was a nice little girl in Portage, Wis. Like other nice little girls in her home town, she sometimes went to the store on errands for her mother. One day when Annette went to the grocery, however, her appearance nearly caused a riot. For on the end of her leash was not a playful puppy but an all too-serious-looking six-foot rattlesnake.

She was a little surprised at all the excitement because, after all, the big rattler was only her favorite pet, Elmer. He had even helped her learn to swim by letting her hang on to his tail as he wiggled through the water. Her father had given Annette her first snake on her very first birthday—not a rattler then but a harmless fox snake. She had loved snakes ever since. In 1940, when she was seven, she appeared on the Hobby Lobby with both hands full of her pets. Before that show, however, Dave took the precaution of building a stout screen between himself and little Annette with her snakes.

Hobbies often mean money as well as fun, as a lot of people on Dave's show have demonstrated. That profit angle interests almost everybody—that goes for Dave, and me, too.

Blowing square soap bubbles sounds like one of Major Hoople's goofier projects. Wallace Block of Buffalo, N. Y., who owns a photographic laboratory, claims such wacky bubbling is a practical commercial business. He blows triangular, cylindrical and square bubbles by using a special wire hoop or frame which he dips in the soap solution.

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Hoaxes Shock World

[*Continued from page* 71]

The figure was made of gypsum, all right. Then it was dipped in black ink, sanded and treated with sulphuric acid to "age" the figure and give it the Old Look. Pores were created by using a special hammer fitted with sharp needles, but it was impossible to fake any vestiges of hair. From Chicago the statue was shipped to Cardiff and buried. Unfortunately for the hoaxers there wasn't enough secrecy.

P. T. Barnum, who, like Ralph Waldo Emerson and other celebrities of the day, fell for this colossal hoax, tried to buy the giant for $100,000. But his offers were turned down. Undaunted, he had a similar statue made which he exhibited as the original. So, the great showman pulled a hoax upon a hoax!

For the all-time world's heavyweight hoaxer, though, there is still nobody to challenge that amazing old trickster, the great Barnum himself. During his fantastic career as a showman, he never ran out of crowd-stopping fakes—always "the one and only," "the astounding sensation of the age," etc.

Once Barnum whitewashed a giant Jumbo and passed it off as the genuine white elephant of Siam. Another time he grafted the body of a monkey on to the tail of a fish and made a fortune displaying it as the actual corpse of a mermaid.

But long before Barnum's time, and long afterward, there have always been a plentiful of hoaxes to shock the world—from that Trojan Horse packed with Greeks to the current "magic spike" that can cure everything from baldness to backseat driving.

How gullible are you? Are you willing to put your faith in a magic elixir absolutely guaranteed to keep you young all your life? Have you seen any sea serpents or flying saucers lately? Do you accept the fantastic things you hear or read without that proverbial grain of salt?

If your answers are "yes," then you're a ready-made customer for some Barnum's "Great Unknown."

For Barnum found he could drum up terrific crowds for his "Great Unknown," which he displayed with plenty of fanfare on a railroad siding. The customers lined up one by one before a freight car, then paid for a quick look at the "Unknown."

And what was the mysterious "Great Unknown"? An empty freight car—and a request not to reveal this secret marvel to the next customer.

As Barnum remarked,

"One's born every minute."

One *what*?—did the man say? Why hello, there, sucker! •

MI Tests the Buick

Tom takes a gander at the new fish-proof hood ornament on the 40 before track-testing it. Note the "cowcatcher" bumper grill.

Built into the new Buick's rear bumper are lights for backing up. McCahill wonders if they'll take a beating in big-city traffic.

Another novelty on the 40 is the oblong shape of the hood vents, which are fascinating T. M. here. Last year's were round.

LOOK, Ma, a new Buick! And it's good, too. The 1950 Buick 40, the Special, will prove an unhappy item for its competitors in the lower end of the medium-price bracket. This neat number drops *ker-plunk* in the middle of the Dodge-Pontiac-Mercury group. It's a good automobile and a good dollar-value at today's prices. For the first time in nearly three years this popular-priced model is hitting the road again—and it's miles ahead of those small Buicks of recent years.

To test this new model, I went out to the General Motors proving grounds, 40 miles south of Flint, Mich. That's quite an experience in itself. Getting into the proving grounds is about as easy as getting an OK to run up and see the Queen in Buckingham Palace about some Fuller brushes!

Inside GM's exclusive 1260-acre auto preserve are several million dollars' worth of separate experimental garages belonging to all the car manufacturers on the GM team. Here you will see practically every make of car in the world, all busy running tests. The people in the Buick garage know exactly how this new job will stack up against a Dodge, Mercury, Kaiser, Ford or Super-Droop Six, because they have the latest models of each one right there for comparison checks.

The new 40 is a good-looker. Careful scrutiny will reveal a number of design changes. The two most outstanding changes are the hood vent ports and the combination bumper-grill. The vent ports, which were round on the 1949 models, are now oblong on the 1950 jobs. This new peephole shape undoubtedly was designed to make it easier for midgets with square heads to look out.

That bumper-grill is really a new twist. Buick must have hired some designers away from the Baldwin Locomotive works, because if this isn't a true miniature revival of the old cowcatcher, then something's wrong with my eyes. Seriously, though, it's not a bad wrinkle, as you can replace each individual downward bar of the cowcatcher separately in the event some extra tough pedestrian bends one while he's being strained through the grill.

Another item of interest to Buick fans is that the ornamental bombsight on the hood is now being made with a much huskier outer ring. Teen-agers found the old ones

40

This new 1950 "Special" lives up to its name—in looks, roadability and high performance, Tom McCahill finds.

excellent gifts for their girl friends to use as bracelets. Unprotected Buicks used to be open game for any young Tarzan who got a yen to snap off the ring to present to his fair lady. These tough new rings will call for a Joe Lewis or a Jack Dempsey unless, of course, the hood hijackers are unsporting enough to use a sledge hammer.

Dynaflow or a conventional transmission will be available in all models. Depending on the transmission selected, the horse power will be either 110 or 120—the 120 being for the Dynaflow. Increased compression, from 6.3 to 1 in the standard to 6.8 to 1 in the Dynaflow, gives this 10-hp lift. With the new compression ratio, premium gas is a must.

After being driven for miles around the proving grounds with a Buick engineer at the wheel to familiarize me with the track pitch as well as the new car, the Dynaflow-equipped 40 was [*Continued on page* 87]

SPECIFICATIONS

MODEL TESTED

Buick 40 (1950 model), two-door sedan.

ENGINE

Eight-cylinder valve-in-head, 248.1 cu. in. piston displacement, 120 hp (Dynaflow) at 3600 rpm; compression ratio 6.9 to 1, torque max. 215 foot-pounds at 2000 rpms.

DIMENSIONS

Wheelbase 121.5 in., overall length 240. in., overall width 79.4 in. overall height (loaded) 61.7—unloaded 63.4 in.; tread front 59.1 in., rear 62.2.

WEIGHT

3800 lb., road clearance 6.8.

PERFORMANCE FIGURES

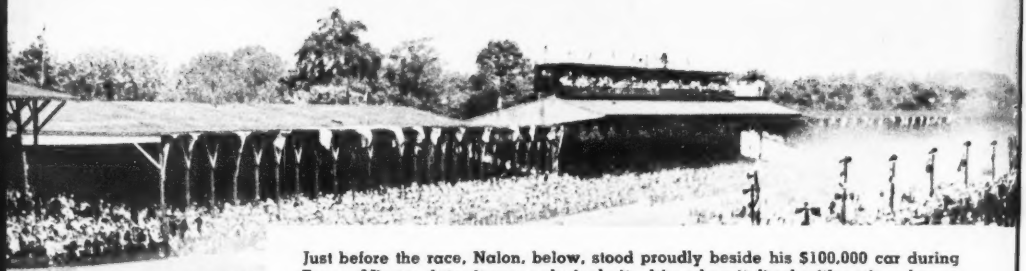
0 to 60 in drive—19.2 sec.
0 to 60, using low and drive and shifting at 42 mph—16.3 sec.
0 to 70, using low and drive—24.1 sec.
0 to 80, using low and drive—30.2 sec.
0 to 90, using low and drive—48.1 sec.
Half mile, from standing start, using low and drive—34.2 sec.
Top speed—90 to 92 mph.

SPEEDOMETER ERROR

At 60 mph speedometer reading, actual speed was 56.96 or an error of 3.04 mph.

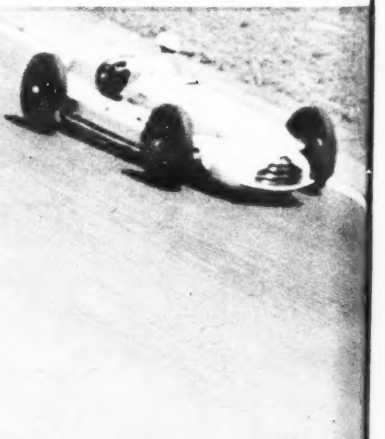
Tearing around the rim of the GM proving-ground track at 90 mph, McCahill finds the Dynaflow "Special" hugs the road tightly.

Death of a $100,000 Race Car



Just before the race, Nalon, below, stood proudly beside his $100,000 car during Taps. Minutes later it was only junk, its driver hospitalized with serious burns.

Roaring into the lead at the start, Nalon's Novi, below, set a record of his 126.564 mph for the first lap. At 45 miles he had lapped the other cars in the famous race.



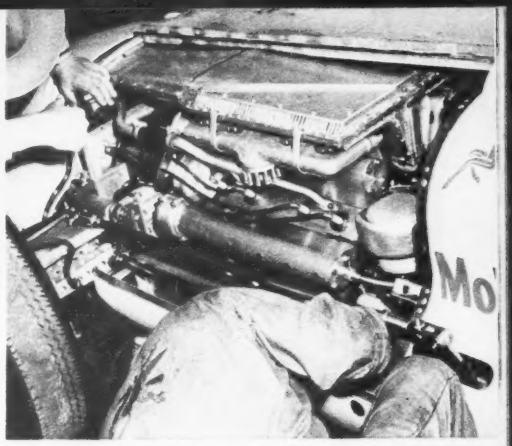
THE best driver and the fastest car didn't win the 1949 Indianapolis race. They broke records, set a blistering pace never equalled. But they didn't win.

Iron-nerved Dennis (Duke) Nalon and his 550-horsepower Novi Mobil Special, designed by Bud Winfield, should have won that race. We wish they had, because that was the combination MECHANIX ILLUSTRATED boldly predicted, away back in our May issue, would cop the 500-mile classic. But the Duke didn't win because, on the 24th lap, after shattering every Speedway record for 55 miles and pounding down the straightaways at 200 mph, his great car suddenly died of a broken axle.

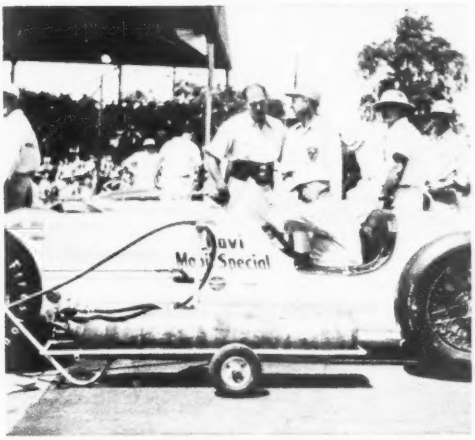
The stricken Novi rocketed against the northeast wall, then burst into flames. Duke somehow kept the Novi upright, somehow managed to unhook his safety belt and plunge free of the flaming inferno that had been, seconds before, the "car nobody could beat."

On these pages we present the dramatic picture story of that car's death and the miraculous escape of the finest, gamest driver in the race-car business. •

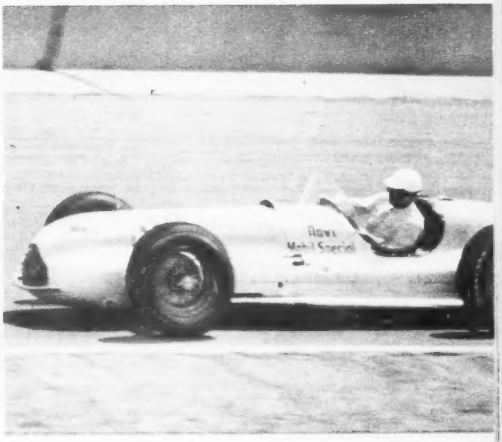
Duke, center, smiles with confidence as Winfield right, and Jean Marcenac prepare car for the race.



Marcenac, No. 1 racing mechanic, pokes his head under the 550-hp Novi V-8 engine for a last look.



In the pit, Nalon waits behind the wheel as a compressed-air cylinder cranks the Novi's engine.



Duke leans over as he pulls hard on a curve. He stuck to the pole and led the pack for 55 miles.

Sign in front of the crew-crowded pit warns Duke of oil on the track. Seconds later he cracked up.

Arrow marks the spot where Nalon's record-breaker snapped an axle under the strain and hit the wall.

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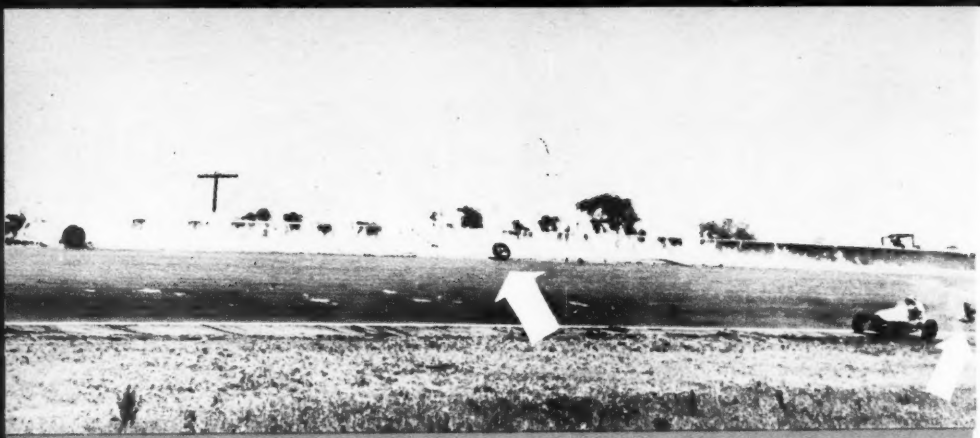
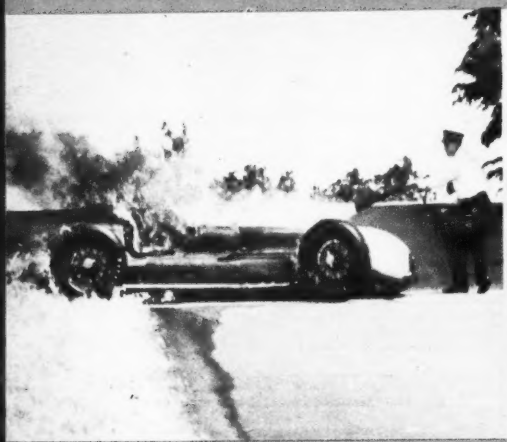


A wall of fire springs up in the wake of the crashing racer as it hurtles to death against the concrete barrier. Wheels that broke off are still spinning on the track.



Fireman vainly fights the flames just after Duke escaped from the dying car by jumping the wall.

The race rolls on as the shattered cadaver of the world's finest racer still smolders on the track.

Here's how the Novi cockpit looked just before the race. Powderpuff on wheel was for wiping goggles.

Less than an hour later, the powderpuff and nearly everything else in the crashed car had burned up.

MI Tests the Buick 40

[*Continued from page* 83]

turned over to me to test as I pleased. For the benefit of all present and future owners of Dynaflow Buicks I want to point out some little known facts about this transmission. What I am about to disclose has never been mentioned in any Buick ads or promotional literature. As you may know, there are two positions ahead on the Dynaflow, like the Hydra-matic "low" and "drive." You are told that the low is only for climbing mountains, pulling out of mud and similar emergencies.

At all other normal times you are instructed to place the car in the drive range. That's all, except for adding throttle. In this range you can start up any reasonable hill or break away from a light quite fast. BUT, and I do mean *but*, a lot of cars will leave you flat at that light. At a half-mile acceleration contest at Indianapolis recently, I was truly amazed to find a big Buick Roadmaster with Dynaflow 'way back on the list when the final tally came in. This usually fast car was beaten by cars you wouldn't expect to stand a chance against it. I made up my mind to find out why.

Here's what I learned:

Dynaflow in the normal-drive position is not a fast acceleration unit by any stretch of the imagination. It's faster than most people would usually want for a getaway in traffic but not so speedy for the guy who likes flash.

To get true flash out of Dynaflow when you want it, start in the low range and jam your foot to the floor. Keep your foot there until you reach 42 or 43 miles an hour. Then, *without releasing the throttle pressure a fraction,* shift to driving range. There won't be any noise or disturbance but this will make the Buick bound ahead like a tiger. I imagine the reason the Buick people never gave out this interesting pointer is because it would conflict with their ads telling how gear-shifting had been entirely eliminated.

To show what a difference this one shift makes, note these results of my tests with the Buick 40: 0 to 60 mph in drive range all the way, 19.2 seconds; 0 to 60 using low to 42, then drive, 16.3 seconds, or almost three seconds faster. A half-mile from a standing start in drive range took 36.8 seconds. The same distance using low range to 42, then shifting to drive range, took 34.2 seconds. If you already own a Buick with Dynaflow and secretly feel it's just a crate, try this when you feel like light racing—and watch your snappy getaway.

For my other test I abandoned the drive start entirely and used the combination low and drive-range method. Here are the results: 0 to 70 mph in 24.1 seconds; 0 to 80 in 30.2 sec-

[*Continued on page* 145]

Why Not Load Your Own?

[*Continued from page* 66]

will save you considerable time, but for really exact measuring, the majority of reloaders stick to the balance scale, which weighs the load to a fraction. A small funnel in the neck of the case will simplify this task.

Once loaded, the cases should be placed in a block. This can be turned out at home. Get a piece of two-by-four and bore twenty or thirty holes, slightly larger in diameter than the bullet base and an inch deep. These will hold the loaded cartridges upright and make them easier to handle.

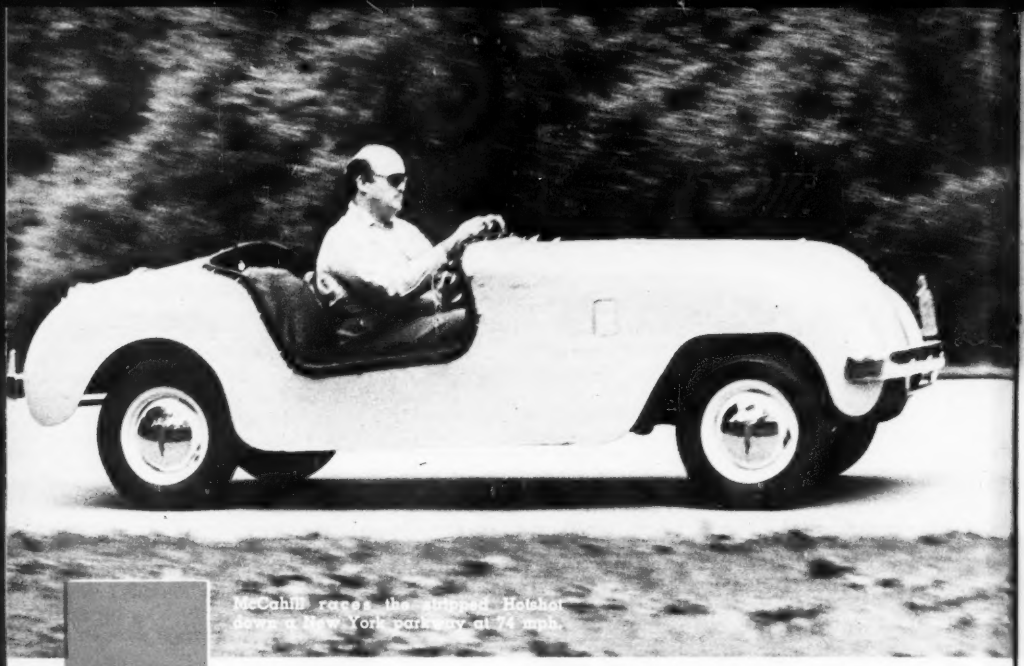
The final step is the seating of the bullet, for which a die is provided in the reloading tool. The important step in this procedure is the adjustment of the bullet seater to the exact depth desired. For the novice a little trial and error will supply the correct answer.

You now have a cartridge of your own creation, and like the angler who finds greater sport in taking trout on flies tied by himself, you will get a bigger thrill when you touch off a round of your own loading.

Reloading tools can be obtained today for almost any caliber, and if you are interested in experimentation, you can get several moulds providing different bullet weights and designs for the same caliber. Also, through reloading, you can experiment with velocities. This, however, can be a dangerous procedure if you fail to heed the charts on maximum loading. Your rifle is designed to withstand only certain maximum pressures, and charts are available which give you the maximum powder loads for the various calibers and makes.

You can obtain catalogues and handbooks from most of the makers of reloading tools, and if you are planning to take up the activity with real interest, it would be well worth your while to invest in The Complete Guide to Handloading, written by Captain Philip B. Sharpe, and published by Funk & Wagnalls. Most materials can be purchased from Stoeger Arms Corp., 507 Fifth Ave., New York City.

Those who are frightened at the thought of keeping powder in the house have no more cause for anxiety than they have at the idea of having gasoline in the tank of their car. Store the powder in a cool, dry place, be certain the cork sealing disc is present in the cap, and stop worrying. Don't make a habit of picking up the powder can and shaking it violently to determine how much you have left, however. This shaking might build up static electricity, and when the smoke clears away you may be holding a harp instead of the can. •



McCahill racets the Crosley Hotshot down a New York parkway at 74 mph.

MI Tests the Crosley 'Hotshot'

A "warm missile" is one way our English cousins might sum up the new Crosley "Hotshot." Whatever you call it, though, this brand-new, miniature American sport car should prove a fiery shot in the arm to its big, somber American contemporaries. This new car is something to have fun with and enjoy—definitely not a vehicle to carry crepe at your grandmother's funeral.

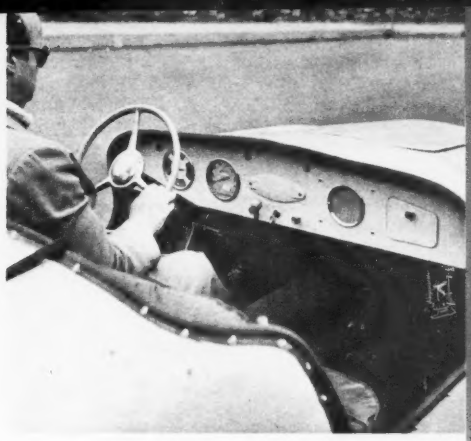
In a talk I had with Powel Crosley, Jr., recently, he told me he was going to take a crack at the sport-car business with the Hotshot. You can take it from me—at the price—$849 at the Cincinnati factory—it's a very strong bid. It's the poor man's M.G. and zings along like a Mix Master version of a Mercedes.

I like Crosley himself because he still speaks to me despite some of the things I have written about his products. It gives me particular pleasure therefore to find myself so enthusiastic about the new Crosley.

This little car, as it comes delivered, will beat the fenders off any stock car of its engine size (44 cu. in.). Stripped down, with headlights, windshield, top and spare tire removed, the midget roadster turns into a racer and takes on a very continental look. At a quick glance, as the Hotshot whizzes down the road, you might readily mis- [*Continued on page* 145]

By Tom McCahill

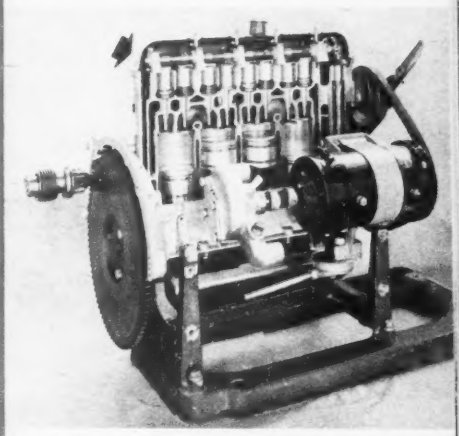
The Hotshot is a "convertible," too—converting from the top-up roadster, at left, to the snappy race car above.



Big Tom finds the tiny roadster-racer has "more leg room under the dash than any car in America."

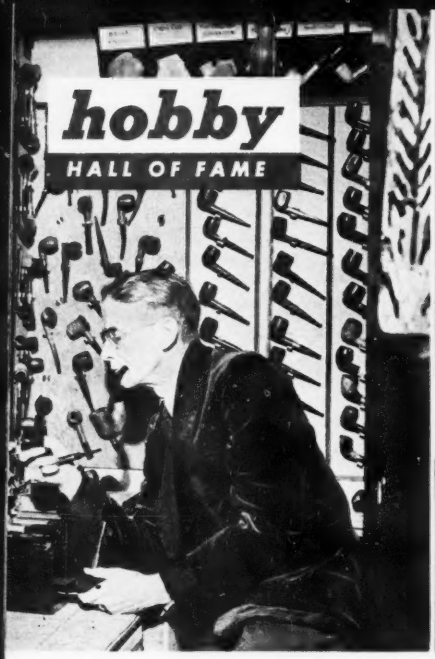
Tilting forward one of the bucket seats, Tom stows his camera in the Hotshot's luggage space.

Our man McC. has to lean close to see the small but rugged engine that makes this car a Hotshot.



The arrow points to the overhead-camshaft, key to the racing power in the 26.5-hp Crosley.

To show the real "lowdown" on the stripped Hotshot, Tom rolls his "poor man's M.G." up to a Packard sedan. Sizzling along at 70 mph, only 16 inches above the road, in this baby sport job feels like 170.



It's hard for Duncemaster Howard to get the answer to a real hard question on his quiz show, above. So, he relaxes, left, by puffing away problems with 1200 pipes.

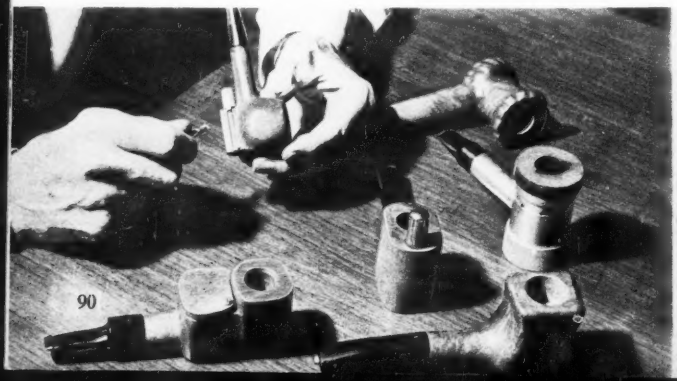
Duncemaster Howard—Professor of Pipe-ology

GOT any questions on your mind today? Ask Tom Howard, the zany duncemaster on CBS' radio and television crazy quiz, It Pays To Be Ignorant—he'll give you *any* answer . . . except, of course, the right one. But ask him for a light and you may end up with all your pockets full of pipes—complete with built-in lighters.

Some years ago POP (short for Professor of Pipe-ology) Howard was strictly a havaseegar guy. Pipes? Pfui and pfft—fit for people who live in stables. Then one Christmas his daughter Ruth gave him a Dunhill. To show her he appreciated the gift, he put the thing in his teeth and puffed. Now he *does* live in a stable—a $100,000 one he turned into his home at Red Bank, N. J. And he has 1200 pipes to light up—not counting some 600 he's given away to his friends.

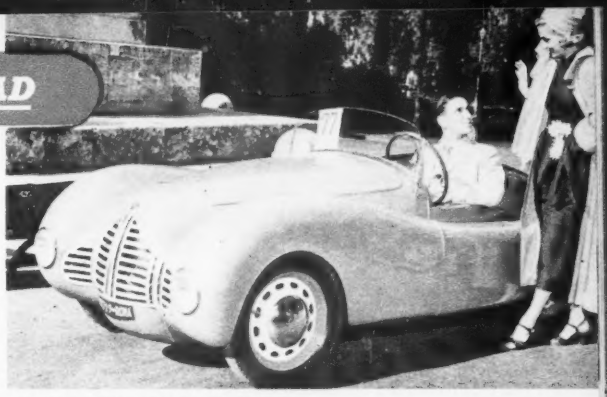
Howard buys briar roots and rubber bits by the bag. Then he shapes up his raw materials in his workshop. Three hours later he turns out a fancy pipe with its own lighter, self-stoker or water-cooled bowl. His pipe array runs from a one-incher to a seven-foot smokestack fired by blowtorch.

And how much does it pay this piper to be ignorant about everything but pipes? A trifle over $218,000 per year. No wonder he finds life "just a bowl of pipes." •



Pipe-ologist Howard strikes up a favorite pipe with the metal match he designed to fit under the bowl. Others shown here give an idea of his inventiveness in dreaming up better smokes in his home workshop: Bottom row, a self-stoker (far left) and a "holed bowler" (for easier cleaning); middle, built-in lighter and water-cooled bowl, and top, hand-notched job for easier grip.

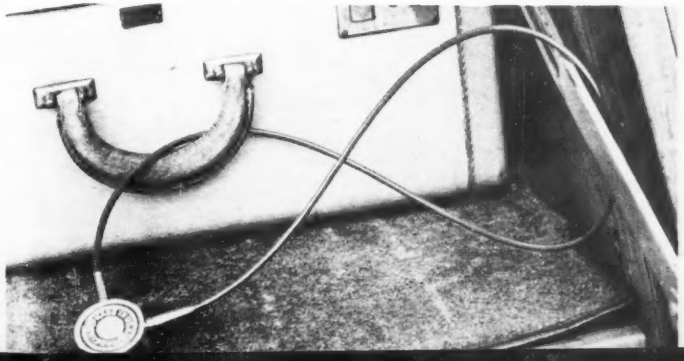
NEW on the ROAD



Mickey Mouse is the Italian nickname for this Fiat Topolino sport car in the 500 cubic centimeter class. Price is about $1670. The girl at right is wearing a smart new outfit priced at $750—almost half the cost of the auto!

Dollar Car: that doesn't refer to the price of this auto, just the decorations — 486 silver dollars. A set of Texas Longhorn horns and a silver horse on the hood complete the trimmings. R. I. Smith of Harold's Club, Reno, Nev., owns it

Oil-Dicator flashes a warning on your dash when oil level falls too low. The gadget signals an amber light when it drops to one quart below normal and a red light when oil falls to two quarts below. Parkwood Manufacturing Co., Haddon Heights, New Jersey.



Cable Lock safeguards bags in the luggage rack. It's a flexible cable covered with Vinylite plastic, one end of which is permanently fastened. The other end can be removed by turning key. Reese Padlock Co., Lancaster, Pa.

CRAFTS and HOBBIES

Workbench Award Winners...

Last year we ran plans of Bouncie II, a model runabout. Kenneth Ring, of Saulte Ste. Marie, Mich., liked her so well that he decided to make a full-size version of her. This is not normally recommended procedure, but the resultant boat is so cute that we couldn't resist giving him an award. Ken writes that she is 12 ft. 8 in. long by 49½ in. beam and very fast with a 5-hp outboard.

BOATS, boats, and more boats! One of the fastest-growing sports in the world is boating; and one of the most economical ways to get afloat is to build your own boat —preferably from MI's tested plans. In recognition of the popularity of boating, we've dedicated our Workbench Award department this month to that most ambitious of all craftsmen—the amateur boatbuilder.

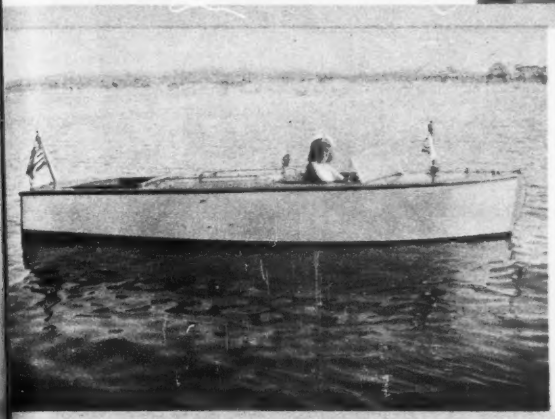
A five-dollar check and a Workbench Award Certificate are being mailed to each of the six winners. If you are also a workshop fan, why not let us know what you are doing? Send us a picture and a letter describing your project. Any project at all is eligible. If your entry is one of the monthly winners, you'll receive our check and the handsome Workbench Award Certificate, which you'll want to frame and hang on the workshop wall.

Clear snapshots will do, but glossy enlargements are preferred. And, for human interest, hand the camera to a friend and get in the picture along with your project. Enclose return postage and mail entry to:

MECHANIX ILLUSTRATED Workbench Awards
67 West 44th Street, New York 18, New York

Wanting a boat that he could use with a small motor for fishing and with a big motor for thrill-riding, Bill Thompson, of Nashville, Tenn., chose Fisherman, Plan No. 967. He writes, "I had never tried anything like this before. My kid brother and I, working a couple of hours every evening, completed the job in two months. When we took her out with 22 hp, she really traveled. Your plans were simple and easy to follow."

Another builder of Fisherman is Daniel Capaldi, of Providence, R. I. He says, "The project took me about four weeks of spare time to build and cost about $60. The only change I made was to add a bulkhead and door at the after end of the foredeck. It's a wonderful craft and I'm getting an awful lot of fun out of it. I would like to send my sincere thanks to the designer and to MI for publishing plans for this little boat."



One of the 3,000-plus builders of Scram, our famous runabout (Plan No. 936), was Arthur Ostrem, of Alameda, Calif. Art installed a converted 1938 Dodge engine in her and reports that she'll do 35 to 40 mph. The great popularity of Scram is undoubtedly due to her easy-to-build plywood construction, her modern design, and her smooth performance. She'll take five passengers in speed and comfort and has plenty of room for supplies and gear.

Albert Dorand, of New Orleans, is our next winner. His letter reads, "Here's Alerne, built from your Plan No. B-153 (Skylark) by my brother and myself. It took us about four months to complete the job. Although this was the first boat we ever built, we had no trouble whatsoever following your plans. We're very pleased with its performance and have referred a number of our friends to MI for the same type of boat plans."

Snuffy (Plan No. 955) is our most popular boat blueprint. Here are not one but two boats built from her plans. James Finnell, the worthy craftsman from Alexandria, Va., writes, "My grandsons very often go to Washington, D. C., in the early evening and make the trip home in about an hour. It is about seven miles. Each boat has a 2¼-hp outboard motor. I am proud of these boats and think with my little experience I did a good job. Don't you?"

Refinishing Wood Floors

"Hire a good sanding machine," says MI Guy, "and you'll be all set for a professional floor-finishing job."

In order to get near baseboard and around corners, you'll need what is known as an "edger."

Go over by hand any spots that machine may have missed. Hand sand between coats of varnish.

Floor sealing is applied in a manner similar to varnishing. Use an extra large, clean brush.

Varnish should be applied in small areas and brushed out well. Be sure to use "floor" varnish.

If your floors are well worn and require that original new look, you can save quite a bit of money by refinishing them yourself. Let MI Guy show you how.

By Robert Scharff

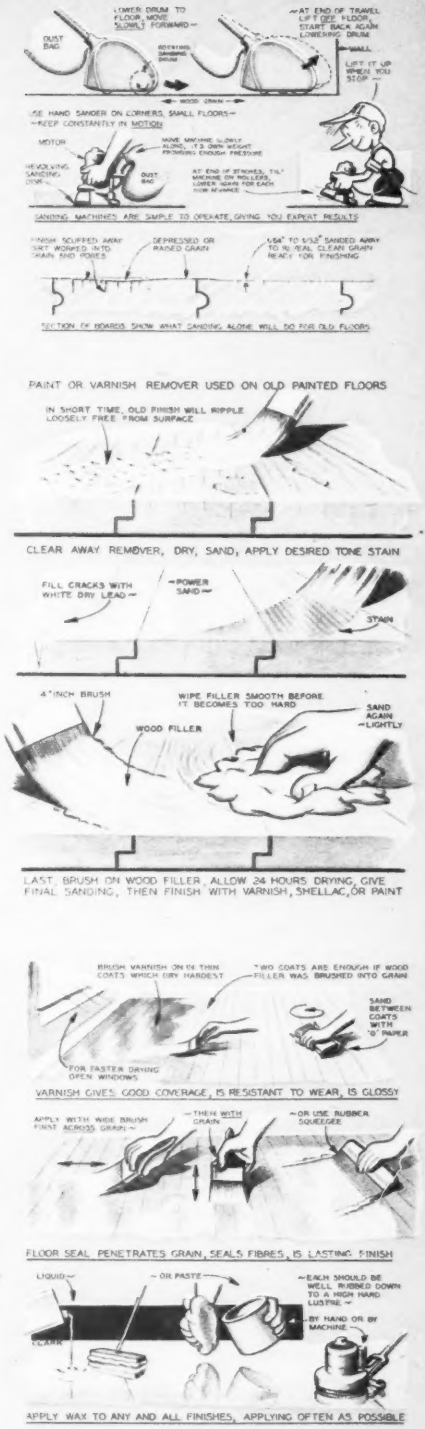
EVERYONE admires a beautiful floor. To keep floors in good condition is not hard if you know what to do—but to restore them after they have been allowed to get in poor condition is a difficult job. Inasmuch as the appearance of the floors have such a great bearing on the attractiveness of your home, any necessary reconditioning is well worth your time.

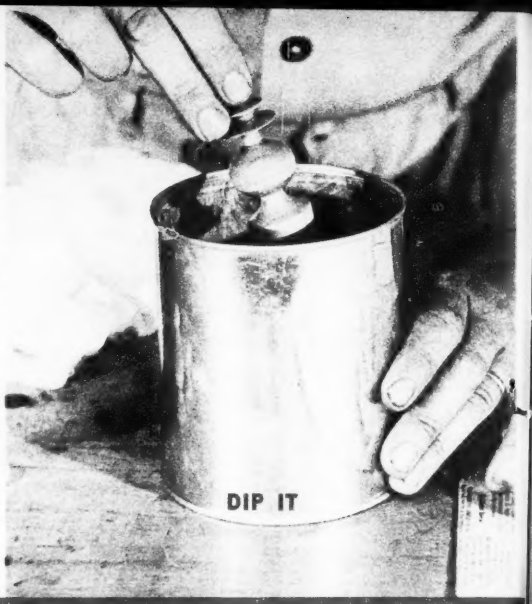
While many good floor seals, varnishes or shellacs are readily available, the problem of having good floors goes much deeper than the final finish. Preparatory work, sanding and buffing, go a long way in their effect on the final appearance of the floor. Motor-driven sanding machines, usually equipped with a vacuum cleaner that removes the dust produced by sanding, may generally be rented at low cost from your local hardware store.

Start sanding by moving the machine slowly forward and gently lowering the sanding drum into contact with the floor. Keep the machine moving by walking slowly forward. Take short steps and keep your feet close to the machine. At the end of the forward cut, the sanding drum must be raised clear of the floor before the machine comes to a standstill. To start the backward cut, the machine must again be in motion as the drum is lowered in contact with the floor. Sanding must be done with the grain and enough taken off to get down to the clear wood.

If a sanding machine is not available, the old finish may be removed with paint and varnish remover. Wash with gasoline, turpentine, or denatured alcohol to remove all traces of the paint remover. When the floor has dried thoroughly, it should be smoothed with No. 1 sandpaper. If any spots remain, they may be bleached out by using a solution of one teaspoonful of oxalic acid in a cupful of hot water. This acid is a poison and should be handled with care. Cracks may be filled with white dry lead worked into a putty, or by adding fine sawdust to glue melted in a double boiler.

When a dark [*Continued on page* 132]





SHELLAC...and how

Shellac is one of the oldest and most useful finishing materials. Every home craftsman should know these facts about the interesting substance.

By Rollin H. Wampler

BEFORE using shellac, you should thoroughly understand its unique properties. In raw form, it is known as lac resin—a material that is derived from an insect in India.

Liquid shellac is available in three stages of purification: orange, bleached (or white), and dewaxed. Orange shellac consists of partially refined shellac flakes dissolved in alcohol. It has a pronounced

Left: Always strain shellac through cheesecloth before using. Center: For almost all purposes, it must be thinned with pure denatured ethyl or grain alcohol (not the antifreeze type). Right: To color shellac, add a little spirit-soluble dye.

reddish-brown color and is cloudy in appearance. Bleached shellac is a similar solution, but is made from bleached resin. Dewaxed shellac is usually light in color and, unlike the other two, is wax-free: so it is perfectly clear.

All three forms perform much alike. Orange is used where the color is not objectionable; bleached, where the color must be light; and dewaxed, where the slight cloud imparted by the wax is not desired.

The concentration of the shellac in alcohol is known as its "cut." Most shellac on the market is four, four-and-a-half, or five-lb. cut: that is, four, four-and-a-half, or five pounds of shellac are dissolved in one gallon of alcohol. The cut is indicated on the label. For almost all purposes, commercial shellac will require thinning with alcohol. Here is a table showing how to convert one cut to another:

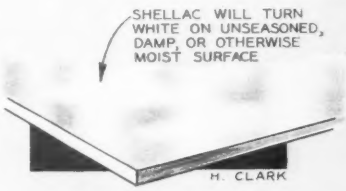
Original Cut	*Desired Cut*	*Alcohol to be Added per Gallon*
5	3	3½ pints
5	2	1 gallon
5	1	2⅔ gallons
5	½	6 gallons
4½	3	2½ pints
4½	2	6¾ pints
4½	1	2⅜ gallons
4½	½	5½ gallons
4	3	2 pints
4	2	6 pints
4	1	2⅛ gallons
4	½	5 gallons

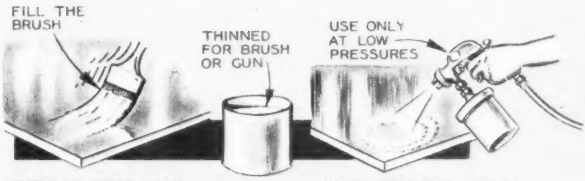
When thinning the cut, use only pure denatured ethyl or grain alcohol. The antifreeze grade is not satisfactory.

Shellac may be applied by brushing, dipping, or spraying. It may also be applied in two unique manners—by French polishing and by the dip-and-rub method, both of which are described later.

Do not apply heavy coats—they won't dry properly or get hard enough to give good service. Two thin coats are better than one heavy one. Allow three to six hours for drying between first and second

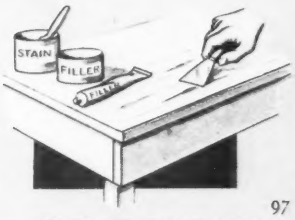
USED WHERE COLOR IS NOT OBJECTIONABLE — WHERE COLOR MUST BE LIGHT — WHERE CLOUDINESS IS NOT DESIRED



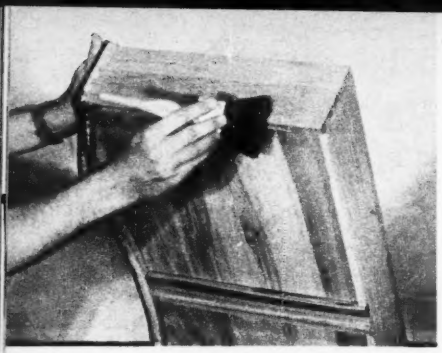


SHELLAC DRIES FAST, BRUSH ON RAPIDLY

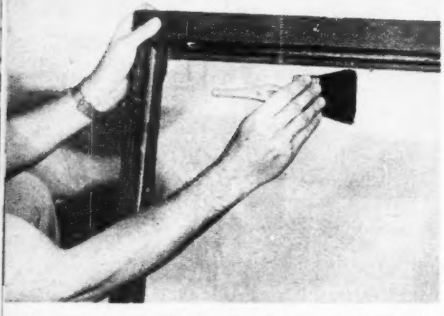
AVOID FORCEFUL SPRAY WHICH DRIES SURFACE FAST, CAUSES RIPPLES



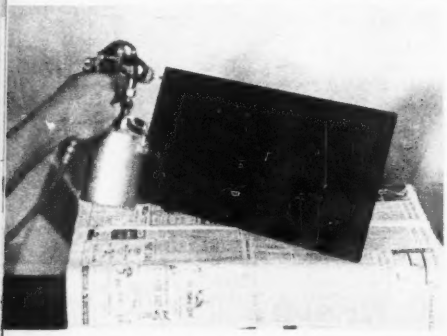
STAINS AND FILLERS SHOULD DRY THOROUGHLY OR SPOTTING, BLUSHING, PEELING MAY OCCUR



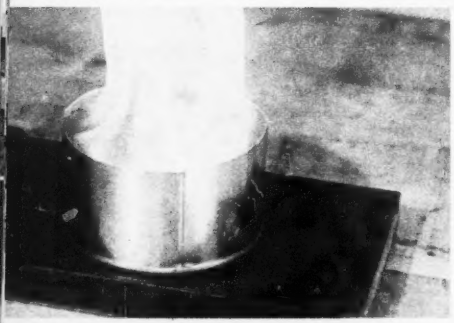
To prevent drawers from sticking, apply some shellac to both the slides and the runners.



Screens won't bleed, discoloring window sills and siding below, if protected with shellac.



Filler sometimes will discolor wood—avoid this by applying a shellac wash coat before filling wood.



Thick shellac makes a good waterproof cement. To thicken, simply burn off all the solvent.

coats and 15 to 24 hours between subsequent coats.

When applying shellac with a brush, work rapidly because the material dries quickly. When spraying, avoid excessive air pressure—30 to 45 pounds pressure is about right. Too much pressure may produce "orange peel"—an undesirably rippled finish.

Except when in use, keep all containers closed to exclude dirt and dust and to reduce the evaporation of alcohol. Store shellac only in glass, wooden, or lead-lined containers. Shellac rapidly loses its ability to dry hard—very old shellac will not dry at all—so throw out all of the stuff you have had more than a year.

Stain or filler should be thoroughly dry before shellac is applied; otherwise, spotting, slow drying, peeling, or other troubles may occur. Bare wood that's to be shellacked should not have a moisture content of over 12% or the shellac may turn milky. The same thing may occur when shellac is applied on a damp, muggy day or in damp surroundings. If a whitish bloom *does* appear, remove by brushing over the surface rapidly with alcohol.

Never rub down a shellac finish with water—it may turn milky or hazy. Rub only with oil.

Before using orange or bleached shellac, shake or stir thoroughly to distribute the wax throughout the solution.

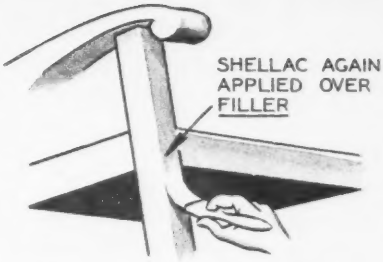
To remove specks and dirt between coats, rub lightly with 5/0 sandpaper. Paper that is too coarse will scratch.

On rare occasions, shellac may darken oak or fir. This is due to a reaction between iron-contaminated shellac and the tanic acid in the wood and can usually be remedied by dissolving four ounces of oxalic acid in a gallon of two-lb. cut shellac and brushing this over the discolored surface. One coat will usually be sufficient, but two may be required.

When using shellac as a floor finish, open-pore floors such as oak should first be treated with a paste wood filler. Maple, pine, and other small-pore woods do not need to be filled. Using three-lb. cut, apply a coat, allow to dry for three to six hours, sandpaper lightly, dust off, and apply a second coat. Let the second coat dry overnight; then wax.

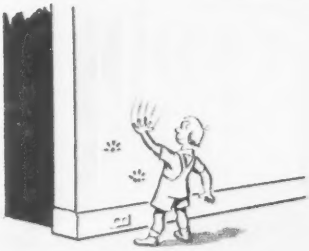
In refinishing old floors, be sure to remove all traces of wax before applying shellac. If this isn't done, the shellac won't dry properly. To remove wax, wash with turpentine. Better yet, add powdered pumice to a commercial floor-cleaning compound and scrub thoroughly. The surface must be en- [*Continued on page* 134]

SHELLAC AS USED FOR 'WASH-COATING' ON FURNITURE

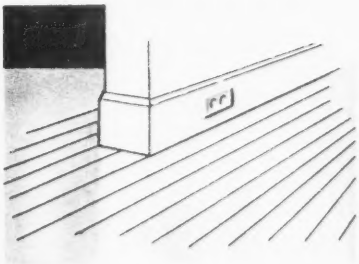


LACQUER AND VARNISHES ON SHELLACKED UNDERCOAT MAINTAIN HIGH GLOSS

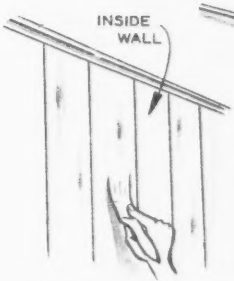
APPLY TO LINOLEUM FOR TOUGHER AND LONGER WEAR



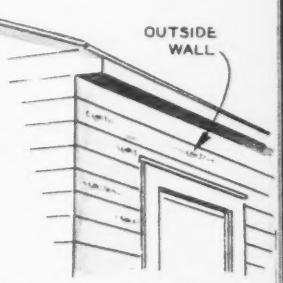
WALLPAPER BECOMES WASHABLE WHEN A THIN COAT IS APPLIED



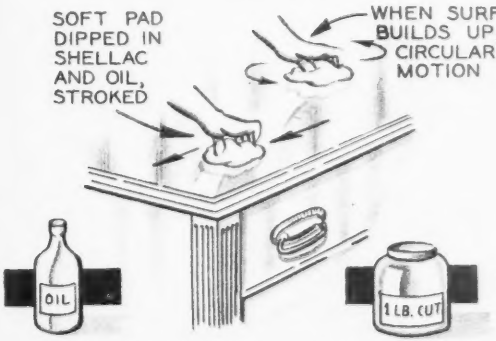
SHELLAC IS POPULAR FOR HARDWOOD FLOORS, WILL NOT SOFTEN UNDER WAXING



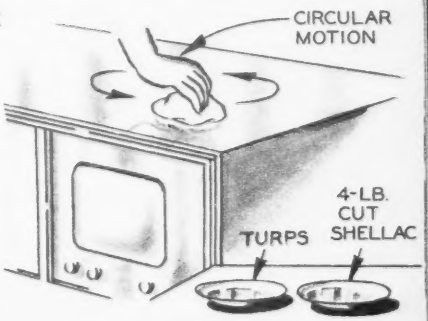
SHELLAC IS EFFECTIVE IN SEALING IN RESIN IN KNOTTY PINE



SAME FOR OUTSIDE KNOTS (APPLY TO KNOTS ONLY)



'FRENCH POLISHING' IS SPECIAL METHOD OF APPLICATION - REQUIRES SKILLED HAND



DIP-AND-RUB METHOD IS EQUALLY EFFECTIVE AND MUCH SIMPLER

Build this '49 CHEVROLET

Photo by Mike Bonvino

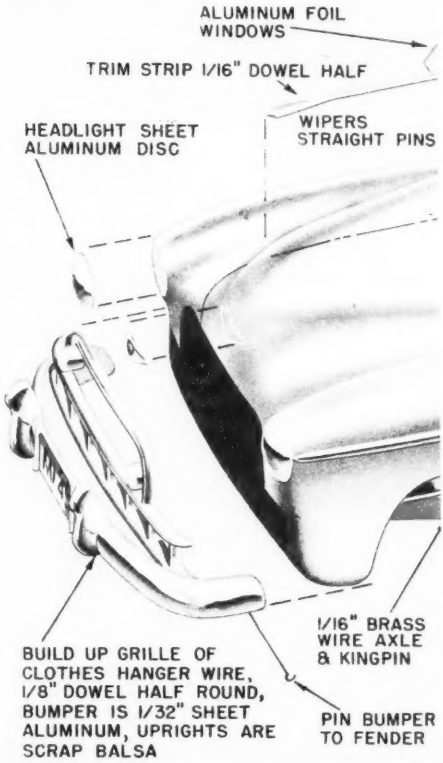
Action—and fun. That's what you'll get with this 10½ in. electric model of America's most popular automobile.

By Larry Eisinger

IF you're one of the millions who admire Chevrolet automobiles then you'll look upon this exact scale electric model with enthusiasm. Patterned after the Styleline 2-door sedan, authenticity is assured because the original working drawings were obtained direct from the General Motors Corporation. Aside from its sleek lines and simple construction, our Chevy model is quite a performer. Powered with a miniature electric motor which in turn is driven by two medium size flashlight batteries, a flick of the switch will make it scoot over any smooth surface—straight, or in circles to the left or right, depending upon the wheel setting.

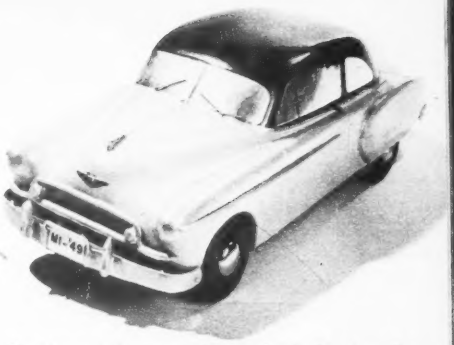
From the construction standpoint this model is by far easier to build than most model airplanes, being built up entirely from ¼ in. and ½ in. thick balsa.

Before starting to build, examine the plans carefully to note the method of construction of the body, steering units and



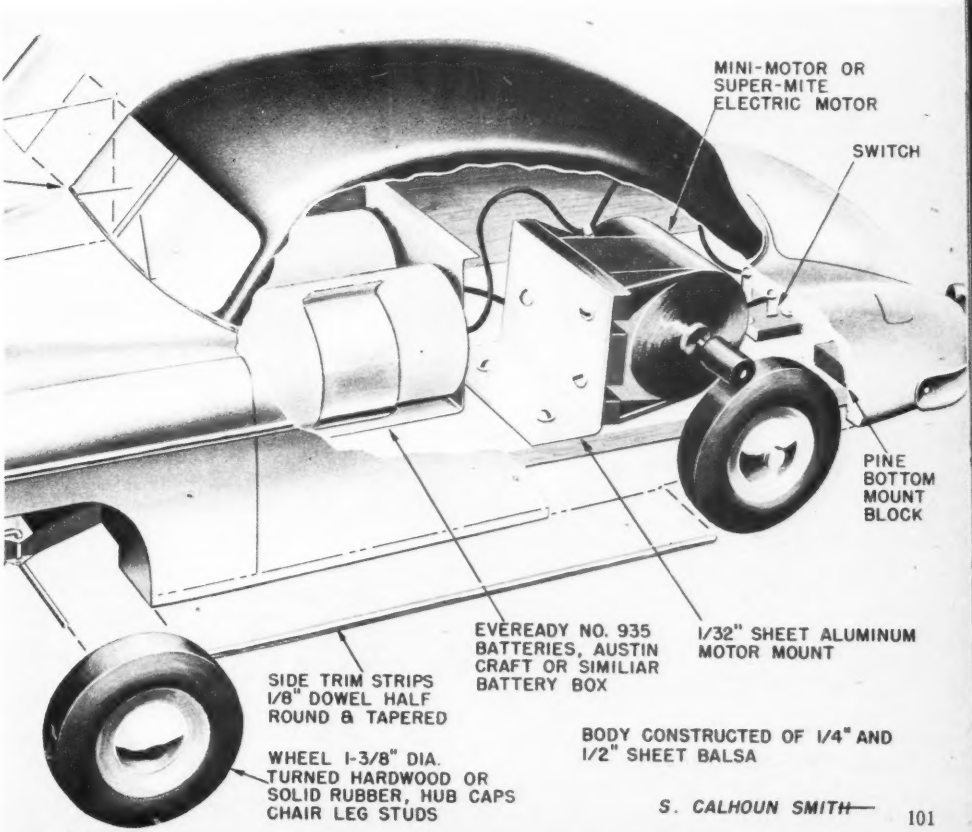
motor installation. And if you don't like the Styleline you can make a Fleetline body which is also shown.

First cut out the ¼ in. hard balsa base, notch the front for the wheels and then cut out the section for the removable motor and battery assembly. Spot-cement the hatch back in place and then trace the side of the body (indicated by the heavy lines) from the full size plans. Cement the hardwood blocks in place and then cut the various fill-in pieces for the front, top, hood, trunk. The perspective drawing (Fig. 1) of the body will give you the location of the various pieces. Pin and cement the sections together, taking care so the sides and top are parallel. Allow the cement to dry and then carve the exterior lines. Always use a sharp blade (an X-acto No. 26 blade, is recommended) check and cut small slivers rather than attempt to "chop" out the body. Use plenty of sandpaper, starting first with No. ½ and finishing with 00. If you have any doubt about any of the curved sections a quick trip to your local Chevrolet showroom will give you the opportunity to examine a real car and duplicate the correct curvature.



Aluminum foil cemented over the body gives the appearance of glass windows. Windshield wipers are straight pins. The inside is hollow for motor.

Now that the outside shape is complete, tackle the grill, bumpers and trim. The curved grill bar is bent from an ordinary



S. CALHOUN SMITH

clothes hanger while the straight (lower) bar is cut from a length of ⅛ in. diameter dowel. The bumpers are formed from sheet aluminum, about .020 in. thick. The uprights are merely scrap pieces of balsa shaped as indicated. All bumpers and trim are painted silver, set aside and mounted only after the exterior has been painted.

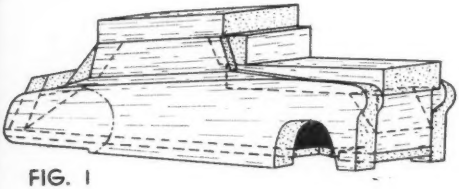
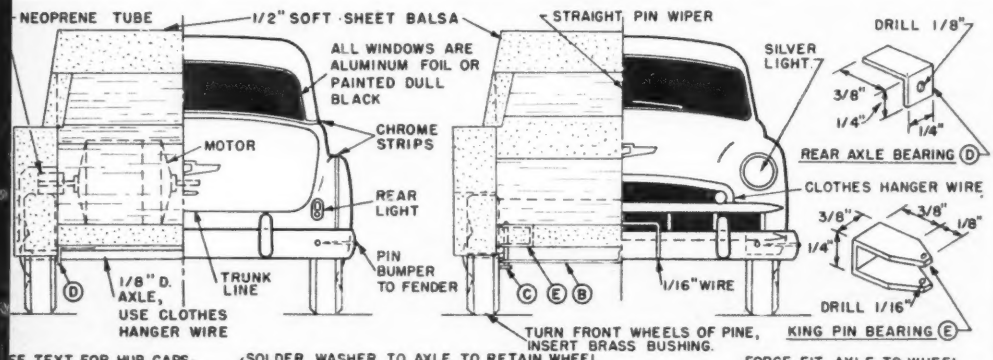


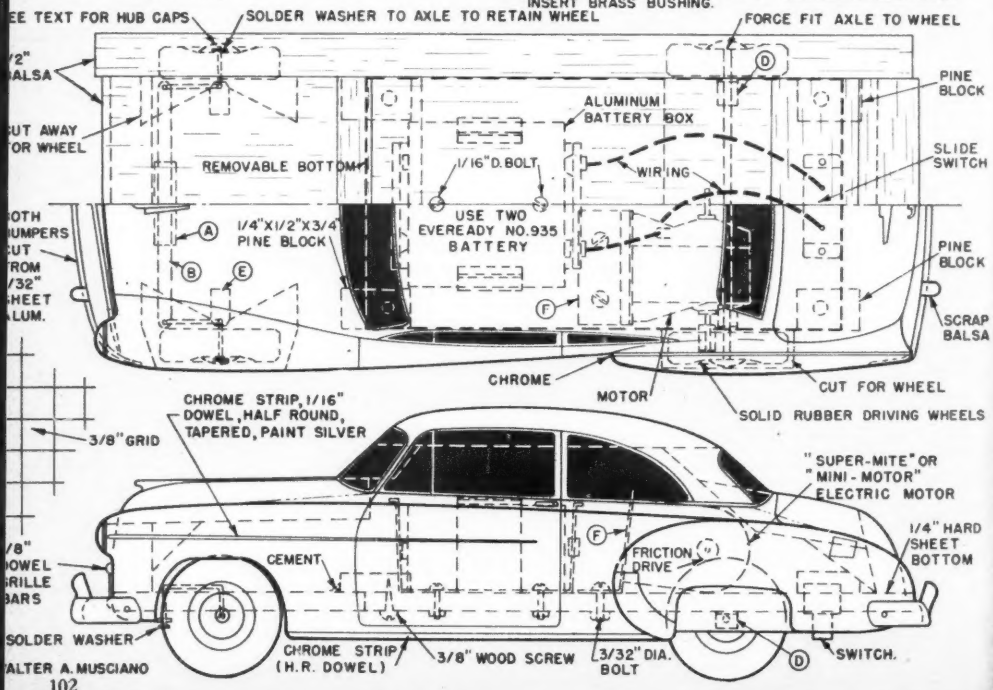
FIG. 1

ASSEMBLED CAR BEFORE CARVING

Next, cut away the removable section of the floor and install the motor, battery box and rear wheels. Most any hobby shop can supply you with these parts, but if your local stores cannot supply you send a post card to MECHANIX ILLUSTRATED, Chevrolet Project, 67 West 44th St., New York 18, N. Y. and you will be referred to a source of supply.

The front wheels can now be mounted in place. With the aid of the drawings, form the king pins from 1/16 in. wire (large paper clips will also do) and assemble. Thus, by moving the bent section of the



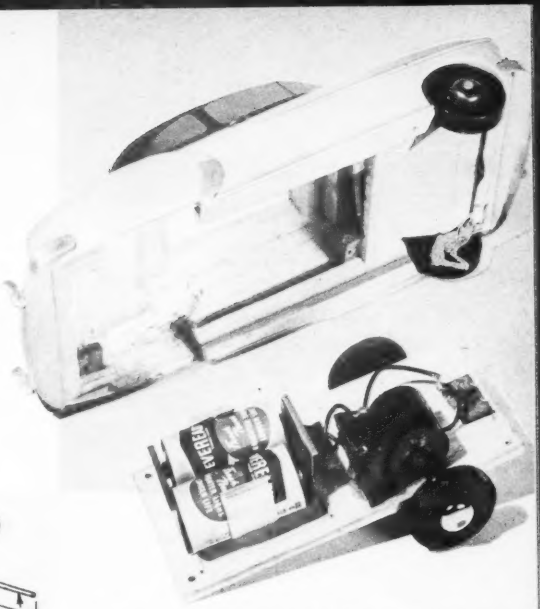


ALTER A. MUSCIANO

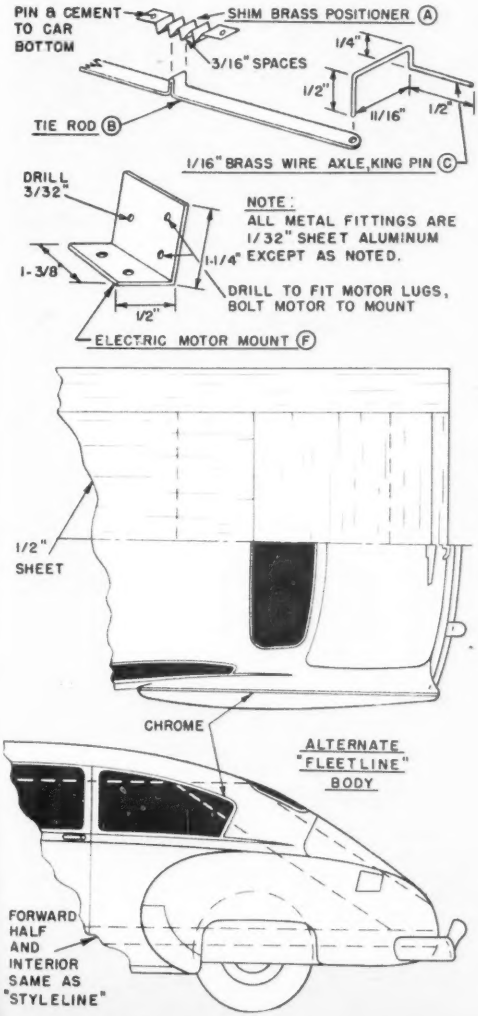
metal tie rod in each of the notches you can set the angle of the wheels. Wire the motor and battery box and mount the removable floor section in place with three wood screws.

We're now ready to finish the exterior. Apply a coat of wood filler, sand down and then brush on a second coat. This should fill up the pores sufficiently so two or three coats of your favorite color dope will produce a smooth, metallic-like surface.

The windows are simulated by pieces of thin aluminum cut out to the window shape and then cemented in place. If aluminum is not available tinfoil can be substituted.



Removable motor section makes possible instant installation of batteries. Friction drive consists of a rubber 3/16 in. O.D. tube on motor shaft rubbing against the rear wheel. For maximum speed model should be kept as light as possible.



The hub caps actually are chrome plated discs glued to the outside of each wheel. These may be obtained from any hardware or 5 & 10 cent store and are called chair slides. They are usually pressed into the bottom of chair legs to prevent wear.

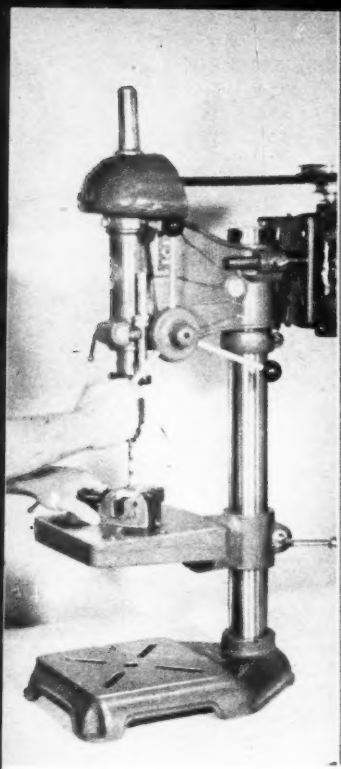
After the final coat of dope or lacquer has been applied, rub down the surface with pumice stone. Mark off the various lines for the door, hood and fenders with a blunt lead pencil. The point will not mark the surface but it will create a slight indenture. Cement the bumpers, grill, and remaining trim in place and you are ready to roll.

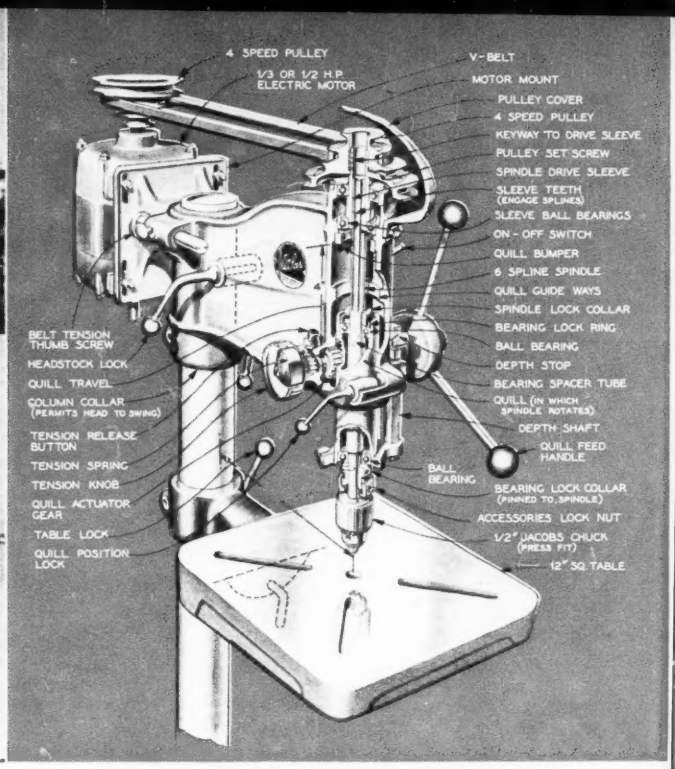
When running, remember that after constant use the batteries will become fatigued. They may appear to be "dead," but actually are still good. Merely turn off the switch and give them a "rest" of about a half hour.

The hook up shown in the plan is for three volts but if greater speed is desired four penlite cells can be hooked up in series to produce six volts—and plenty of zip. •

FULL SIZE PLANS

of this model will greatly simplify construction. Send 25c to MECHANIX ILLUSTRATED Plans Service, Fawcett Building, Greenwich, Connecticut. Please specify Plan No. 407.





how to use the DRILL PRESS

Used with the proper attachments, this versatile power tool can also rout, plane, sand, shape and mortise.

IF you own a drill press or intend to buy one and if you expect to do quite a bit of furniture and general cabinet work with its assistance, you should give serious consideration to the additional purchase of certain accessories that will save you time and money.

Two major units that are extremely useful are the shaping and the mortising attachments. With the shaper you can put all sorts of plain and fancy edges on table tops, legs and shelves and give your furniture a truly professional appearance. With the mortiser, you can cut clean and accurate mortises in a fraction of the time required for tedious hand work. It is relatively easy to cut tenons by hand and it is no job at all on a circular saw, but mortises have always been a headache to amateur and professional carpenters alike. If you want to justify the cost of the entire drill press *and* the mortising attachment, make your own window screens and storm sash and save yourself a small fortune.

There are several minor accessories of obvious value. I particularly like the drum sander because it does such a nice finishing job on *inside* curved surfaces. It is not practical to use sanding disks much larger than 4 or 5 in. on the drill press because of the difficulty of balancing them. An unbalanced wheel rotating at a couple of thousand revolutions per minute can shake a heavy drill press loose from its moorings.

An interesting attachment of comparatively recent introduction is the rotary wood planer. It looks very much like the disk sander and has three razor-sharp cutting teeth set into its underside. Spinning at maximum spindle speed (about 5,000 rpm for most home shop drill presses), it cuts a very smooth swath about 2⅜ in.

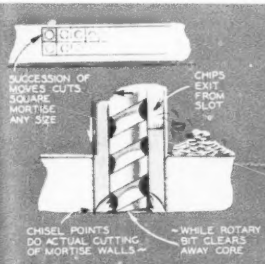
wide. The work is guided by a fence clamped to the drill press table. Boards up to the capacity of the drill press can be handled by overlapping cuts. The work must be approximately plane parallel to begin with, or at least one surface must make even contact with the drill press table. A warped board can be handled quite readily if its *concave* side is put against the table. The planer reduces the hump of the convex top until a flat surface is obtained. The board can then be turned over and the ridges of the concave surface flattened out. Very careful adjustment of the depth of cut is required to prevent score lines from showing on overlapping cuts, and a little touching up with a hand plane may be necessary on some stubborn pieces. However, the tool still saves time and energy.

Routing with a drill press is a simple and common operation. A variety of small cutting tools, resembling ordinary drills, is available for the purpose. Shallow routing can be done with a sharp drill turning at high speed.

Special cutters for making dovetail joints can also be had. Dovetailed drawer joints are lovely things to admire, but they are very difficult to execute, even with a drill press. The layout of the male and female members must be planned and marked with great care. The slightest error in cutting throws the fit off. Do plenty of practicing with scrap pieces before you attempt an actual drawer or box. Successful dovetail joints, especially blind dovetails, are the mark of a skilled and experienced craftsman.

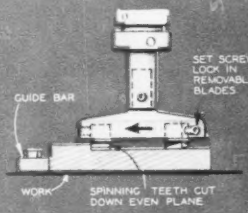
Several points of caution in regard to drill press accessories must be observed. *Never use the regular drill chuck for routing, shaping, planing and other operations at the recommended high speeds. Use a spindle adapter that is firmly tightened to the shaft.* These adapters are very inexpensive and can be used with small grinding wheels and wire scratch brushes in addition to the accessories previously mentioned. The drill chuck is held to the spindle only by friction and the closeness of the tapered fittings. If it flies loose at 5,000 rpm it can do horrible damage. Next, lift the work to the tool on the spindle, instead of lowering the spindle to the work. Drill presses are designed and built primarily for relatively small axial loads, light twist drills, mainly, which form an extension of the spindle itself. If the spindle is fitted with a

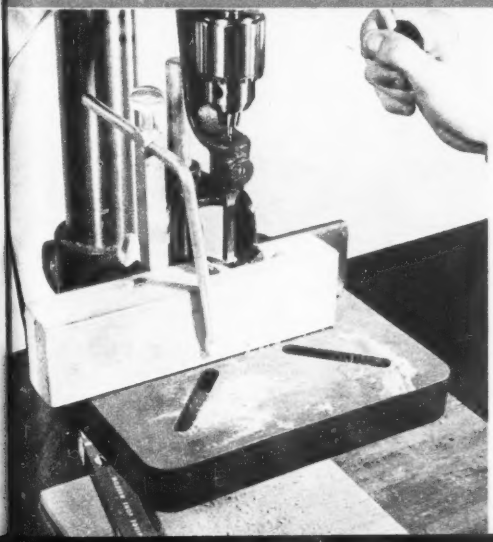
By Robert Hertzberg

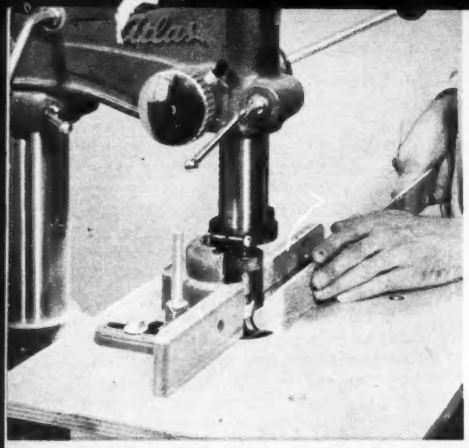


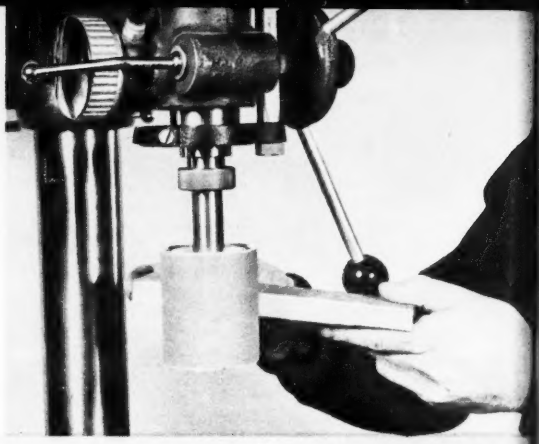
The mortising attachment in use. Work is held against the fence. The bit and chisel combination is moved up and down continuously. The bit cuts a round hole while the chisel cuts away the corners.

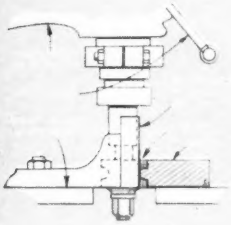
The rotary planer in action. The front half of the board has already been planed down while the back is partly done. The cut is about 1/16 in. deep. Work is guided against a bar clamped to table.

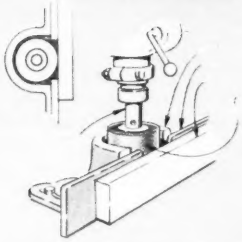










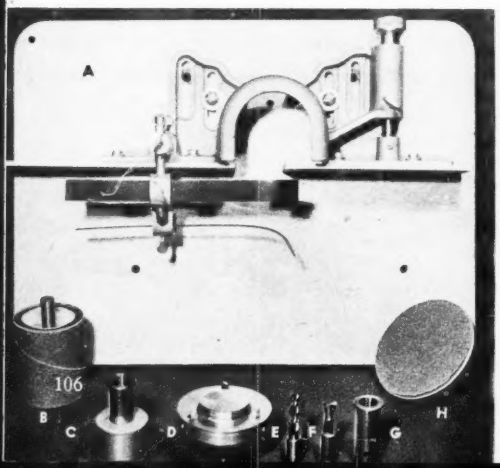


flat, radial device, such as the disk sander or the planer head, and is extended any distance below the head, the whole assembly is likely to start vibrating, with damage to the bearings. In all cases, take light, progressive cuts and feed the work into the tool very slowly. In using the drum sander, press the wood against the abrasive gently.

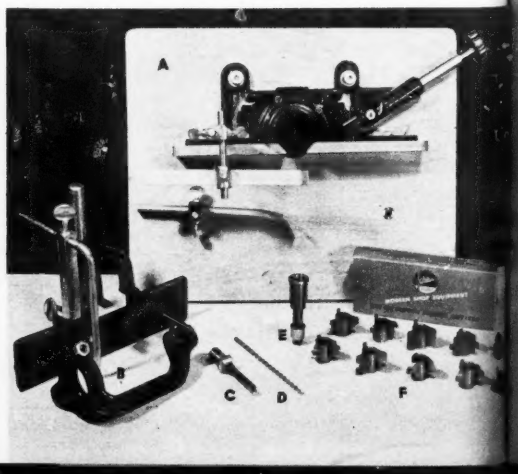
Read the lubrication instructions for your machine and follow them. In ordinary drilling, you probably don't run the press for more than ten or fiteeen seconds per hole, but for sanding, shaping and routing you'll have it on continuously for ten minutes at a time. That's a lot of running time for a machine of this type, and the bearings must be properly oiled. Also check the belt tension, the motor mounting bolts and the set screws in the pulleys. At the high speeds all sorts of queer rumblings develop if everything isn't clamped down tight.

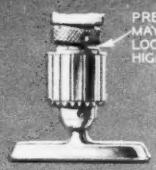
While many operators use the drill press without goggles, it is best to play safe and use them especially if you are drilling into metal and the work is eye level.

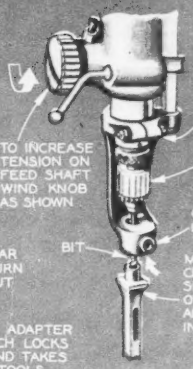
A group of drill press accessories made by Barron. Cast aluminum table is part of set-up for shaping.



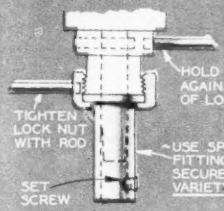
Atlas accessories. Shaping cutters at right fit over the shank of the threaded spindle adapter.

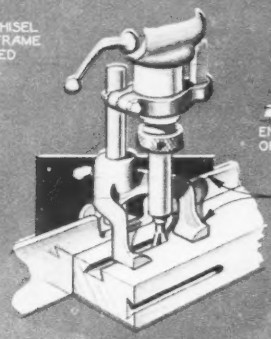


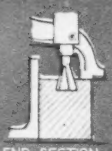




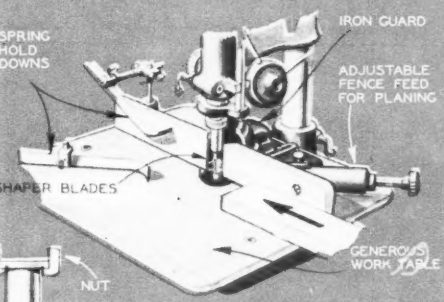
SET UP FOR MORTISE WORK

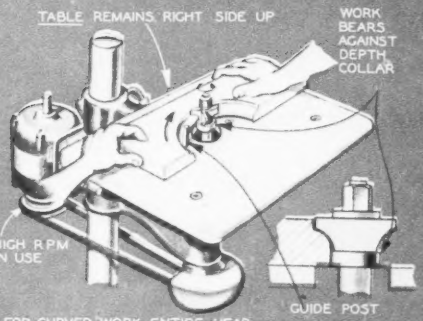




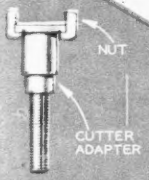


DOVETAILING TOOL IN ADAPTER, WITH WORK AGAINST FENCE

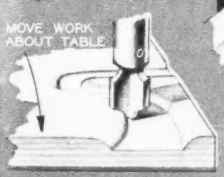




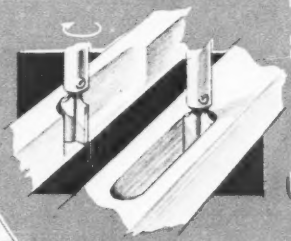
FOR CURVED WORK ENTIRE HEAD CAN BE INVERTED FOR VARIOUS TYPES OF SHAPER CUTTINGS



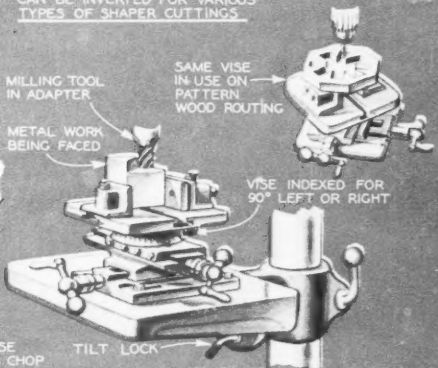
FOR SHAPING, AUXILIARY PLYWOOD TABLE IS BOLTED ON, FENCE AND HOLD DOWNS ADDED AND SPECIAL CUTTER ADAPTER SHAFT USED (LEFT)



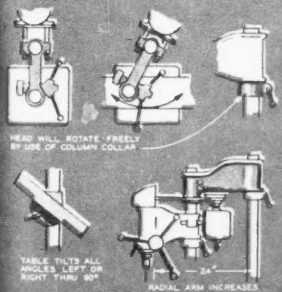
THIS TYPE BIT IN ADAPTER DOES INTRICATE CARVING



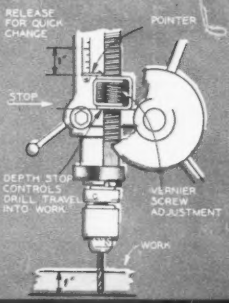
OTHER TYPES OF MORTISE WHERE SPINNING BLADES CHOP TROUGH OR RECESS MORTISE



UNIVERSAL COMPOUND VISE PROVIDES ACCURATE FEED IN TWO DIRECTIONS INCLUDING DIAGONAL



Left: A tilting table is useful when drilling holes at an angle. An extension will permit you to drill holes to the center of a wide piece.



This new depth gage permits quick positioning by pressing the face. Exact setting is achieved by turning the vernier adjusting screw.

Photo by John Haydon

GAMIN...

A 15-Ft. Cruising Knockabout

By William Garden
Naval Architect

A QUICK look at the current cost of boats makes most of us feel like holing up for a year or so, hoping that prices will come down. There's an alternative to hibernation, though—lower your sights to something that you can build today at a reasonable cost. *Gamin* is such a packet. She's deep, roomy, and heavily ballasted. Put her in a race with the average light sailboat and she'll finish last. But put a couple of fellows aboard who want to cruise—or load her down with the whole family, including Aunt Tillie and the dog, for an afternoon's sail—and she'll be in her element.

For cruising, *Gamin* holds one distinct advantage over her larger sisters. Suppose you live in New York and want to see what the coast of Maine looks like. Simply put *Gamin* on a trailer, load her up with gear, and take off. You'll be sailing along the Maine coast before a larger auxiliary could even clear Cape Cod Canal.

When cruising, you'll need only a cockpit cover that fits over the boom, a Primus stove, sleeping bags, a grub box, four one-gallon water jugs, and the miscellaneous gear ordinarily connected with camping. A good set of

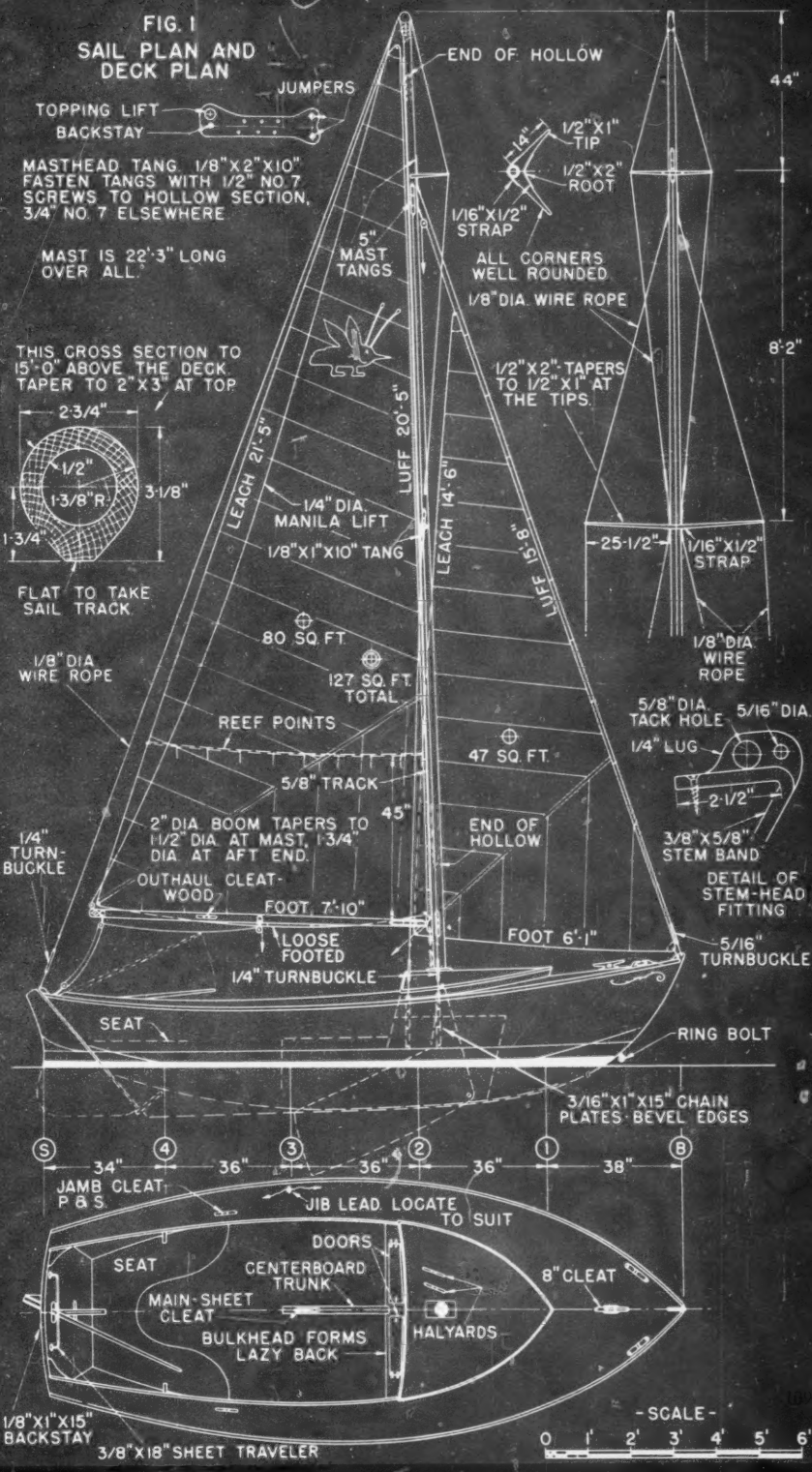
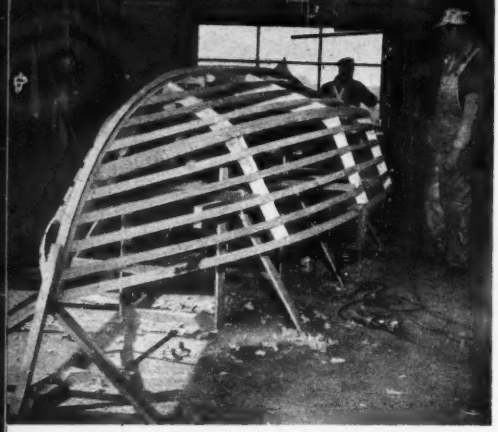
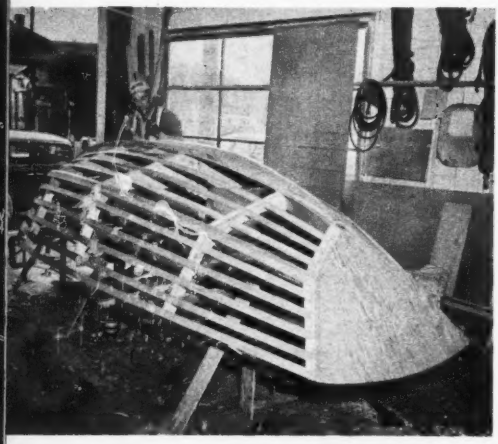


FIG. I
SAIL PLAN AND DECK PLAN
JUMPERS
TOPPING LIFT
BACKSTAY
MASTHEAD TANG 1/8"X2"X10" FASTEN TANGS WITH 1/2" NO. 7 SCREWS TO HOLLOW SECTION, 3/4" NO. 7 ELSEWHERE
MAST IS 22'-3" LONG OVER ALL.
THIS CROSS SECTION TO 15'-0" ABOVE THE DECK. TAPER TO 2"X3" AT TOP
2-3/4"
1/2"
1-3/8" R.
3-1/8"
1-3/4"
FLAT TO TAKE SAIL TRACK
1/8" DIA WIRE ROPE
1/4" TURN-BUCKLE
OUTHAUL CLEAT-WOOD
2" DIA. BOOM TAPERS TO 1-1/2" DIA. AT MAST, 1-3/4" DIA. AT AFT END.
SEAT
END OF HOLLOW
1/2"X1" TIP
1/2"X2" ROOT
1/16"X1/2" STRAP
ALL CORNERS WELL ROUNDED
1/8" DIA. WIRE ROPE
5" MAST TANGS
1/2"X2" TAPERS TO 1/2"X1" AT THE TIPS.
LEACH 21'-5"
LUFF 20'-5"
LEACH 14'-6"
LUFF 15'-8"
1/4" DIA. MANILA LIFT
1/8"X1"X10" TANG
80 SQ. FT.
127 SQ. FT. TOTAL
REEF POINTS
47 SQ. FT.
5/8" TRACK
45"
END OF HOLLOW
FOOT 7'-10"
LOOSE FOOTED
1/4" TURNBUCKLE
FOOT 6'-1"
5/16" TURNBUCKLE
RING BOLT
3/16"X1"X15" CHAIN PLATES-BEVEL EDGES
44"
8'-2"
25-1/2"
1/16"X1/2" STRAP
1/8" DIA. WIRE ROPE
5/8" DIA. TACK HOLE
5/16" DIA.
1/4" LUG
2-1/2"
3/8"X5/8" STEM BAND
DETAIL OF STEM-HEAD FITTING
S
4
3
2
1
B
34"
36"
36"
36"
38"
JAMB CLEAT P & S.
JIB LEAD. LOCATE TO SUIT
DOORS
SEAT
CENTERBOARD TRUNK
8" CLEAT
MAIN-SHEET CLEAT
BULKHEAD FORMS LAZY BACK
HALYARDS
1/8"X1"X15" BACKSTAY
3/8"X18" SHEET TRAVELER
-SCALE-
0 1' 2' 3' 4' 5' 6'



Anyone handy with tools will have little trouble building Gamin. Her V-bottom seam-batten type of construction is strong yet comparatively simple.



Evident here is the rugged framework that insures Gamin's builder many years of carefree pleasure.

sweeps will provide auxiliary power and make a better man of you in the process.

The time taken in laying *Gamin* out full size will more than be repaid during construction. Two four-by-eight sheets of plywood are butted to form a floor 4 ft. wide and 16 ft. long and, to conserve space, the three views in Fig. 2 are drawn one on top of another. Nail a ½ x 2-in. base batten along the bottom edge of the plywood, checking it with a chalk line to make sure it is perfectly straight. Draw in the water line and the station lines exactly as shown. From the dimensions, reproduce in pencil the fore-and-aft lines, using battens—one measuring ½ x ¾ in. and the other, to take the stem rounding, ¼ x ½ in. After the fore-and-aft lines are down, develop the body plan from them; then deduct the ¾-in. plank thickness from each section and draw in the inside line of each frame.

To transfer each inner section line to the framing material, lay shingle nails on their sides along the line about 2 in. apart and imbed the heads in the plywood. Lay a piece of the framing material on the nails and step on it—the line will be plotted on the stock and can then be drawn in with a pencil and sawed out.

Make the side frames extra long to reach the floor when building upside down. They are joined to the bottom frames with plywood gussets, using glue and nails. The stem and transom should be made next, following the same transfer method used on the frames.

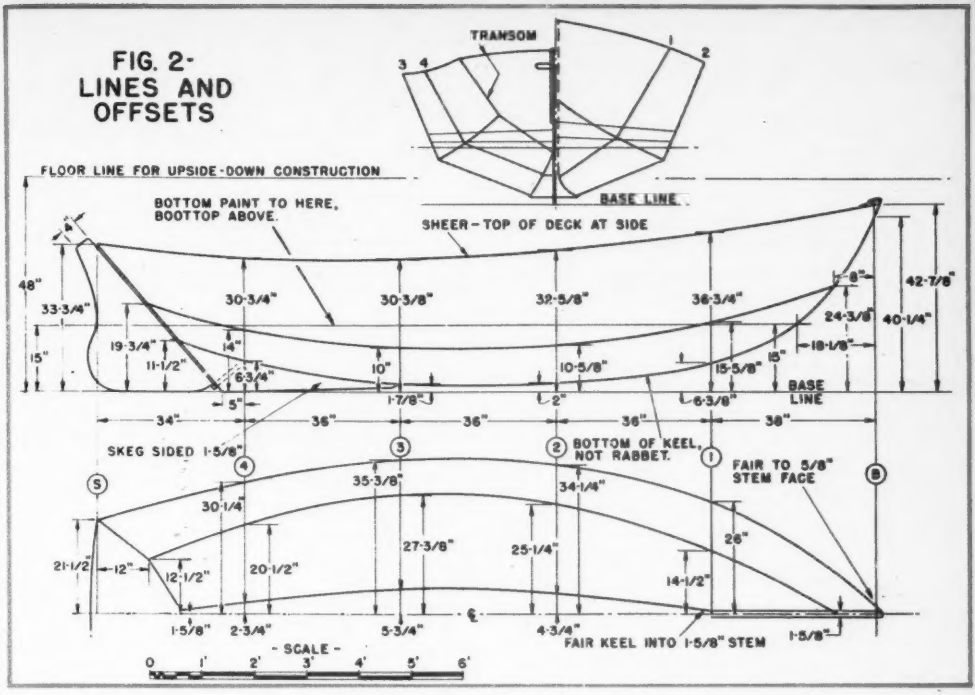
Fig. 3 shows the backbone assembly. Set the frames, stem, and transom on the building floor at the proper intervals. The centerboard-trunk subassembly comes next. The bed logs must be bandsawed to the rocker of the keel. Fasten the keel and apron together with thick paint and screws; then bend them into place and bolt to the transom knee, bed logs, and stem. The skeg can be bolted on aft at this time.

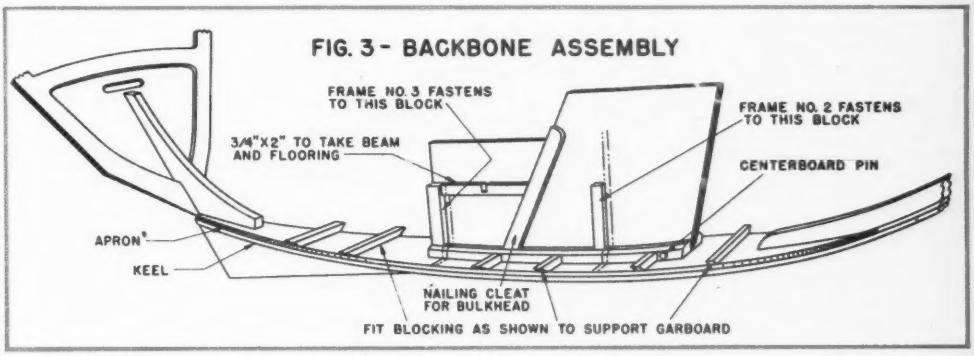
Your next job is to bevel the frames and notch out for the battens, sheer clamp, and chine. Locate the battens to suit the width of your planking material. About 5½ to 7½-in. widths can be used for the bottom planking and 4½ to 5½-in. widths for sides.

Once the fore-and-afters are installed and faired, give the entire structure a coat of flat paint inside and out. Now she is ready for the planking, which is spiled and cut in the conventional manner. Nail it to the frames and screw it to the battens. Since the material widths available will vary from locality to locality, I have specified in the Lumber List the area to be covered rather than the width and length of each piece.

When she is planked, clean the hull off with a smoothing plane, sand with garnet paper, scribe in the water line, and apply a coat of flat paint. The best way to turn her over is to invite the gang in for a party, saw off the frames, and pick her up. Have some padded chocks ready to set her in.

The next day, pick up the pop bottles, sweep out, and sit down for a look at *Gamin*. Have a good look at the sheer for any bumps or irregularities and meditate about the steps to come so work will go along in the proper sequence.





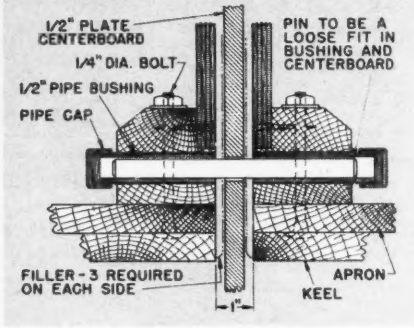
Fair the sheer plank off to the clamp. While she is clean inside is a good time to paint the interior. A dark reddish brown is attractive and wears well. For hot weather, though, a buff would be better.

Fit the deck beams and carling, spring in the coamings, and paint this new structure. For decking, use waterproof plywood. Apply two coats of paint to the underside before fastening down. Along the sheer clamp, lay the decking over a strip of cotton wicking that's soaked in paint. This will keep her tight.

The mast stanchions, floor boards, and seats go in next. Nailing cleats are added to the centerboard trunk to take the bulkhead. The rake of this bulkhead makes a nice lazy back. When the joiner work forward is all in, the cabin top can be fastened down. Installation of the rudder, cleats, and miscellaneous details winds up the hull work.

Now, roll her to one side of the shop and get to work on the spars. Spruce, fir, and Alaska cedar are all good materials. The mast is made in two halves and glued to-

FIG. 5 - CENTERBOARD PIN DETAIL



gether after hollowing. Note in the drawing that the hollow doesn't run all the way to the ends of the spar. The best way to cut this hollow is to take a few cuts on a table saw first, then work out the rest with a gouge, using a template to make sure you don't go too deep.

For gluing up the spar, make a 2 x 10-in. bench, 24 ft. long, from common structural lumber, truing it up with a chalk line. Glue the two halves together and clamp them down on the bench. Allow a couple of days to dry; then unclamp, round off the mast with a plane, sand, and apply five thin coats of good varnish. The hole for the masthead sheave has a strong rake to its bottom side. Carefully sandpaper and varnish here so rain will run off. A wedge should be glued on the after side of the masthead so the backstay will clear the mainsail. The backstay tang, which is detailed, can be made from either Everdur or galvanized iron. All other fittings are stock items. The boom is solid, shaped to the dimensions given.

Sails of a sort can be made by the amateur, but it is a difficult job. You'll be far happier if you go to a professional and purchase properly made sails.

Apply the final paint job to suit your own taste and you're ready to slide *Gamin* overboard. Without ballast, she will be too tender to carry sail in much of a breeze. Sash weights make good ballast; or you can use nice, round rocks about the size of tennis balls. Leave some small hatchways in the floor boards for stowing ballast. Make them about 10 in. in diameter with 9-in. (inside diameter) rings screwed below to form rabbets to take the hatch covers. Ballast *Gamin* to suit local wind and sea conditions—and she's ready to go!

Depending upon your skill and workshop facilities, about 250 to 350 man-hours will be required to complete the job.

All that remains to be done is to choose a name for your boat. We're partial to Gamin, but any short and sweet name, such as *Mischief* or *Dormouse*, will be fitting. Good luck—and happy sailing!

LUMBER LIST

(Approximate Quantities Required)

Common Plywood

Mold-Loft Floor: 2 sheets, 1/4" x 4'-0" x 8'-0"

Waterproof Plywood

Gussets: 1 sheet, 1/4" x 4'-0" x 6'-0"
Bulkhead: 1 sheet, 3/8" x 4'-0" x 6'-0"
Decking: 1 sheet, 3/8" x 4'-0" x 12'-0"
Cockpit Sole: 1 sheet, 3/8" x 4'-0" x 8'-0"
Cabin Top: 1 sheet, 3/8" x 4'-0" x 8'-0"
Cabin Sole: 1 sheet, 1/2" x 4'-0" x 4'-0"
Centerboard Trunk: 1 sheet, 1/2" x 4'-0" x 6'-0"
Transom and Stern Seat: 1 sheet, 1/2" x 4'-0" x 8'-0"

White Oak

(Specify that wood is to be used for boatbuilding; is to consist of first, second, and select grades only; and is to be air dried to a maximum of 15% moisture content.)

Stanchions: 1 piece, 3/4" x 2" x 6'-0"
Chines: 2 pieces, 3/4" x 2 1/2" x 16'-0"
Coamings: 2 pieces, 3/4" x 8" x 14'-0"
Keel and Apron: 2 pieces, 3/4" x 12" x 12'-0"
Head Logs: 1 piece, 1" x 3" x 8'-0"
Frames and Deck Beams: 3 pieces, 1 1/8" x 12" x 18'-0"
Frames and Garboard Blocking: 3 pieces, 1 1/8" x 2 1/2" x 10'-0"
Tiller: 1 piece, 1 1/4" x 1 1/2" x 4'-6"
Carlings: 2 pieces, 1 1/4" x 12" x 12'-0"
Rudder: 1 piece, 1 1/4" x 12" x 6'-0"
Stern Knee: 1 piece, 1 5/8" x 6" x 3'-0"
Stem: 1 piece, 1 5/8" x 9 1/2" x 5'-0"
Skeg: 1 piece, 1 5/8" x 12" x 4'-6"
Bed Logs: 2 pieces, 2 5/8" x 3 1/2" x 4'-6"
Sheer Molding: 2 pieces, 1 1/4" half-round, 16'-0" long

Red Cedar, White Cedar, White Pine or Longleaf Yellow Pine

(Specify that wood is to be used for boatbuilding, is to consist of A and B grades only, and is to be air dried to a maximum of 15% moisture content.)

Planking: 150 sq. ft. of 3/4" stock (see text)

White Pine

(Specify as described above.)

Mold-Loft Battens: 1 piece, 1/4" x 1/2" x 6'-0"
1 piece, 1/2" x 3/4" x 18'-0"
1 piece, 1/2" x 2" x 16'-0"

Longleaf Yellow Pine

(Specify as described above.)

Battens: 14 pieces, 5/8" x 1 1/2" x 16'-0"
Clamps: 2 pieces, 3/4" x 2" x 16'-0"

Sitka Spruce, Douglas Fir, or Alaska Cedar

(Specify that wood is to be used for spars.)

Mast: 2 pieces, 1 5/8" x 3 5/8" x 23'-0"
Boom: 1 piece, 2 5/8" x 2 5/8" x 10'-0"

Note

Complete kits of marine hardware can be purchased by mail from John Dory, Box 96, Fair Haven, New Jersey.

LARGE-SCALE PLANS

will greatly simplify construction. Send $4 to MECHANIX ILLUSTRATED Plans Service, Fawcett Building, Greenwich, Connecticut. Please specify Plan No. B-164.

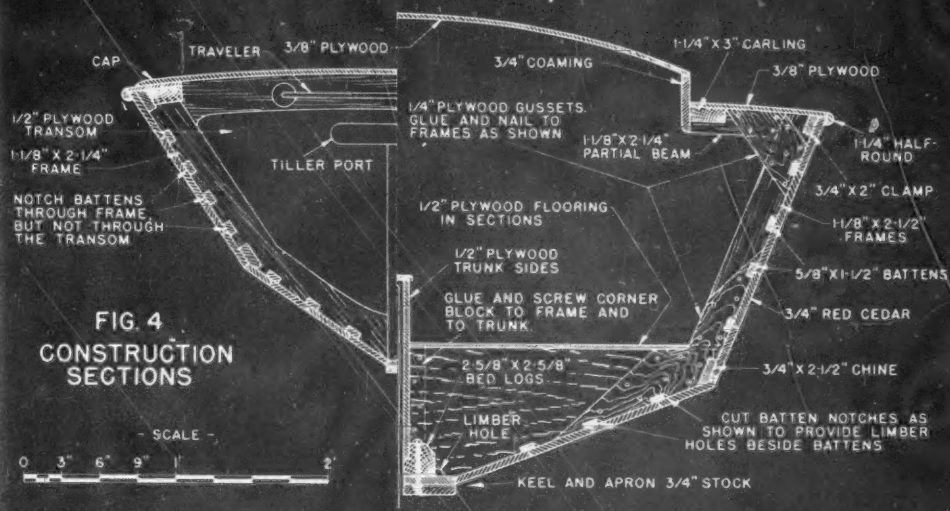
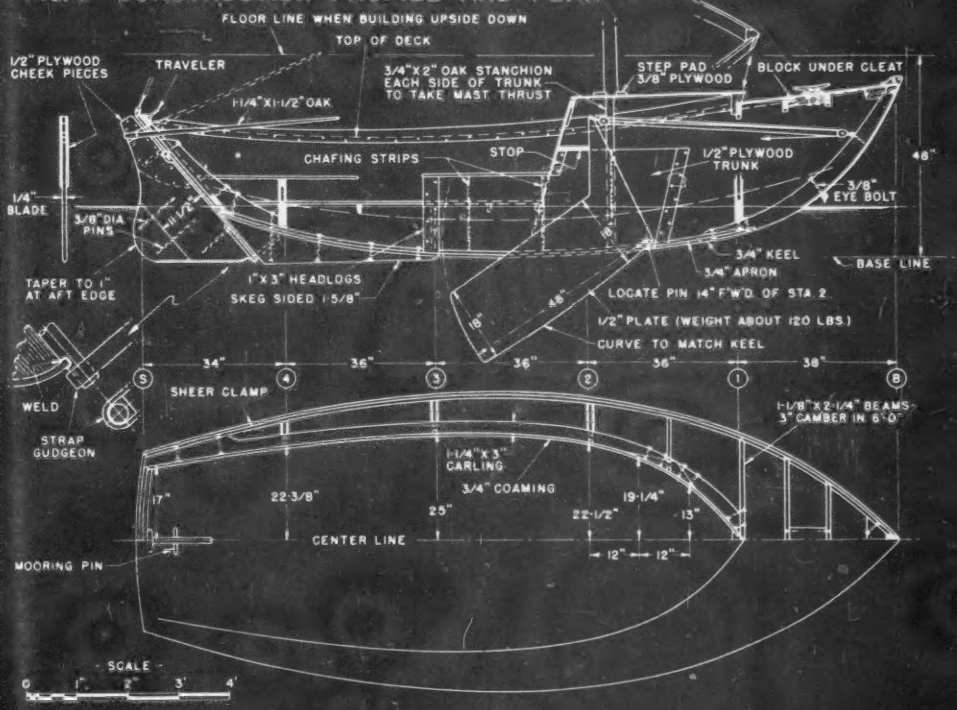


FIG. 4
CONSTRUCTION SECTIONS

FIG. 6 - CONSTRUCTION PROFILE AND PLAN

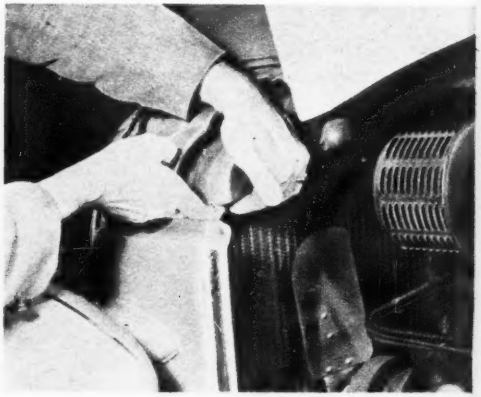


car care

If you are a safe and sane driver you will make a complete stop when entering a main highway from an access road even though there may not be a "stop" sign at that point.

Photo by Robert Brightman

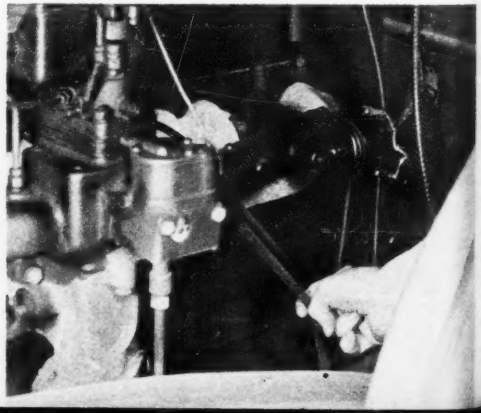
Soft hose is certain to cause trouble when anti-freeze time rolls around. Look for leaks now.



A leak around the bottom of the upper radiator tank is usually overlooked. Feel for moisture.

Slip some newspapers under the car if you want to know if the old wagon is really losing oil.

Racing motor, excessive brake wear and low gas mileage are penalties for weak throttle spring.



behind the wheel

With Fred Russell

If you want a personal reply, please enclose a self-addressed, stamped envelope.

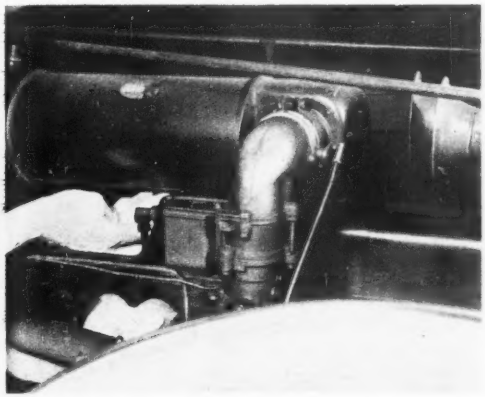
Where can I buy an electric windshield wiper to fit my 1947 Studebaker? A vacuum outfit is worthless under hard pulling. Lloyd Martens, Chadron, Nebr.
Try the American Bosch Corp., 3664 Main St., Springfield, Mass.

I seem to get a loud squeak from the rear of my 1947 Ford everytime I change directions such as from low to reverse or back again. It also occurs when I come to a quick stop and start again. James Harm, St. Louis, Mo.
Try tightening the rear wheels. One of them may be slightly loose on the end of the tapered axle.

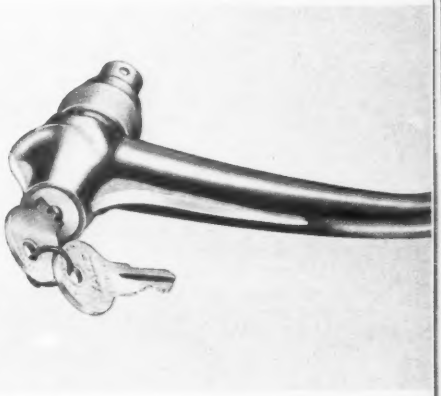
Is there an overdrive made for a 1948 Dodge which has fluid drive? C. A. Krause, Orlando, Fla.
The Truckstell Corp., Cleveland, Ohio, may be planning one. They make the overdrive for the Chevrolet cars.

I am unable to get a 1941 Chevrolet shop manual from General Motors. Herman C. Reich, Nanticoke, Pa.
Suggest you get the Auto Repair Manual published by Motor of New York City. This book covers all American cars for the past ten years.

Brake thumping usually is a sign that the brake shoe return springs have been reversed. Where they are of different tensions they are usually marked for proper identification. **A gas leak** around the carburetor float bowl cover usually calls for a new needle valve and seat. **More dilution** is required to lower the quality of oil if the crankcase is kept full. Keep this in mind as cooler weather approaches.

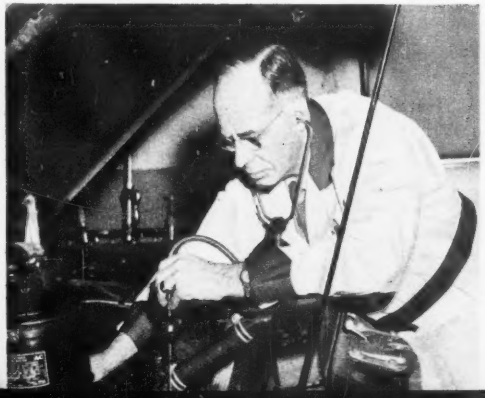


Keep the long-type air cleaner tight as it has a tendency to loosen and rattle because of overhang.

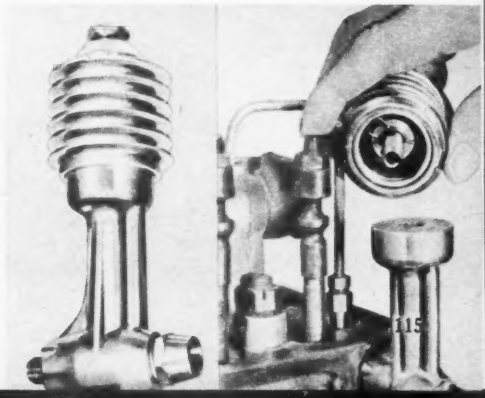


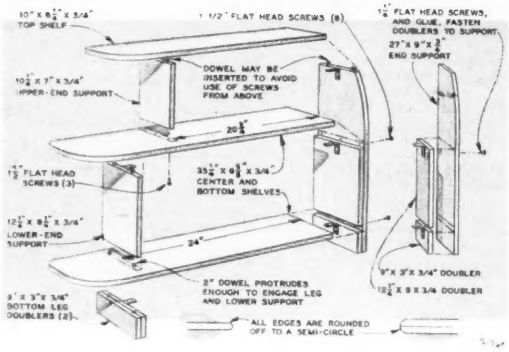
Safety door lock replaces rear door handle. Safe for children as it can be opened from outside only.

A stethoscope designed for mechanics has a metal finger which leads to an amplifying diaphragm.



This device is said to eliminate tappet clatter in overhead valve engines by filtering the oil.





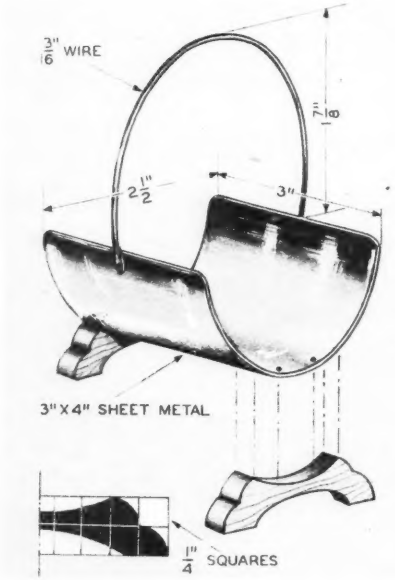
Modern Book Case. This charming book case has a simple design which will fit into just about any place you choose to use it. The rounded curves of the cantilever shelf ends are in the modern mode, but not too extreme.

The drawing tells just about the entire story of constructing this simple piece of furniture. Nevertheless, a few tips are necessary. Don't go shy on the effort you put into rounding the ends of the shelves.

You'll note that the shelves are constructed so that no screw holes or plugs are visible. This makes for a very professional look, much of which is achieved through use of dowel or pegged joints. Glue all joints carefully and screw the metal corners up tightly and the shelves will have surprising rigidity.

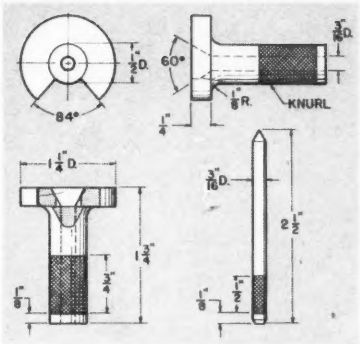
Finish with two coats of clear shellac, then rub down thoroughly with steel wool and hard wax.—*Robert Hoppough*

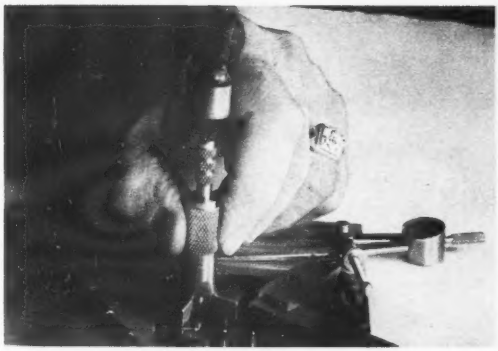
HOME and SHOP



Miniature Log Basket. This attractive miniature log basket holds a package of cigarettes. It is quite easily made out of scrap material.

Cut a piece of sheet metal (copper or aluminum) to the size indicated. Drill six 1/16 in. holes for the handle and legs. Bend the sheet metal around the household rolling pin. Two feet and a handle are then added as shown. The feet are held in place by pins driven through the holes previously drilled in the sheet metal. Polish with dry steel wool.—*Bertram Brownold*





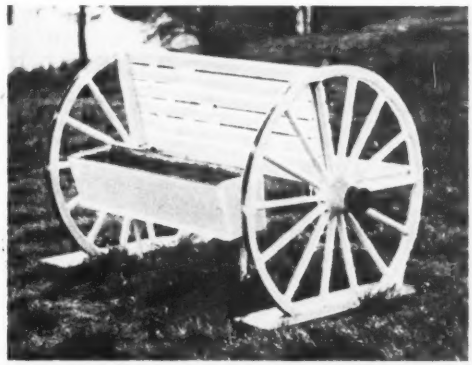
Precision Centering Punch. As all toolmakers know, and novices soon learn, drilling holes on a drill press is a serious operation.

Center punching, the first step, may seem like a very minor operation, but it is really an important part in the proper drilling of holes. If the center punch is not held perpendicular to the working surface and placed at the exact point required, the drill will run off the face of the work.

Toolmakers insure the proper location and perpendicularity of punch marks by the use of the tool shown in the drawing and photograph. The cutout guide permits the point of the punch to be seen. By rotating the guide, center marks can be inspected from all sides before the punch mark is made. Since the punch is also supported perpendicular to the work, punch marks will be true. Strike the punch once, with a sharp blow.—*Joseph Grece*

SHORTS

Wagon Wheels Decorate Lawn. Discarded buggy wheels often wind up as gate ornaments or garden seats. The picture below shows such an application with the addition of a flower box on the opposite side. Portability can be achieved by the use of a prop which engages the top of the seat and sticks into the ground to prevent the seat from revolving.—*Paul Hadley*



Bar-Thinette. After your baby has outgrown his bathinette you can still stay up late at night by converting it into a bar-thinette. A plywood tray takes the place of the original canvas top. A shelf at the bottom holds mixers while the tub is used for ice cubes and as a cooler for wines and beer.—*Samuel Kaufman*

For best reception, shade your portable.

Dry Batteries Aren't Dry

Valuable information enabling you to enjoy maximum service from your portable radios, flashlights, and other battery-operated equipment.

By Robert Hertzberg

IT'S a beautiful day; so you decide to pack a lunch and drive down to the beach. You have a new portable radio and you figure that you'll listen to the ball game while you enjoy the latest style swim suits. The sun is warm and you doze off during a quiet period in the third inning. Suddenly you snap out of it and become aware of a group of boys in front of you.

"Can you tell us the score, mister?" one of them asks.

"Don't know, but we'll get it in a minute," you mumble. You reach for the switch to turn the set on, and then realize that it is on. You twirl the volume control and the tuning knob, but all that comes out is a weak grumble.

"Dead already," you mutter to yourself. "I'll give that dealer a piece of my mind tomorrow. Sorry, boys, set's out of order." You turn off the switch and go for a dip.

Back home that evening, you look into the set for a possible loose connection or other obvious fault. You turn on the switch to see if the tubes light, and in an instant you are floored by a blast of music. You tune around a bit and bring in a dozen stations, loud and clear.

"What happened?" you ask of no one in particular. "This sure is a funny one."

It isn't funny at all. This experience, a common one, serves to emphasize the point that the characteristics and limitations of dry batteries are not generally understood by many users of this convenient, inexpensive form of "packaged electricity." Those who *do* know what goes on inside dry cells obtain the maximum service from them; so let's get acquainted with battery construction and learn a few simple rules regarding battery application.

All dry cells, regardless of size or make, contain the same basic materials and ingredients. The first of the accompanying drawings is a cutaway view of a typical dry

cell with the parts identified. The first and most important fact about dry batteries is that they aren't dry at all, at least when they're in good condition. Only a completely dead battery is dry. The moisture is contained in the depolarizing mixture of sal ammoniac, zinc chloride, wheat flour, and cornstarch that forms a layer of paste inside the zinc can. This goo would leak out of the top if the [*Continued on page* 136]

Fig. 1: The parts of this flashlight battery are similar to those of the No. 6 battery which is delineated above.

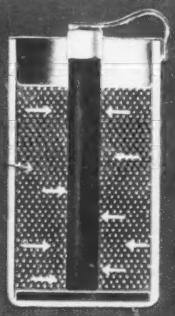


Fig. 2: As cell starts working, hydrogen moves to the electrode.

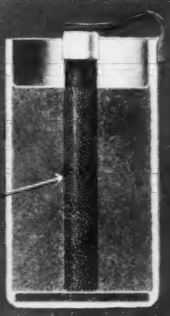


Fig. 3: Eventually carbon is so covered that current can't flow.

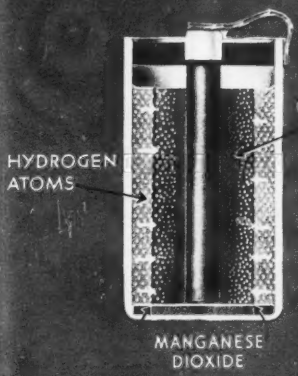


Fig. 4: Oxygen from manganese dioxide combines with hydrogen to form water.

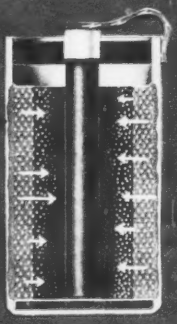


Fig. 5: As the cell is used, the zinc can is gradually consumed.

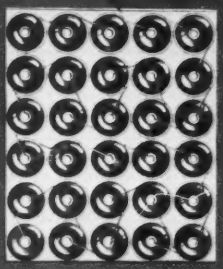
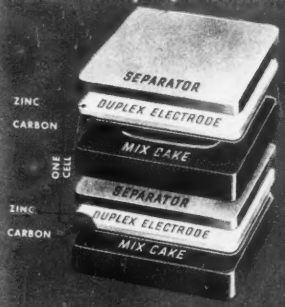


Fig. 6: Top view of 45-volt "B" battery employing round cells.



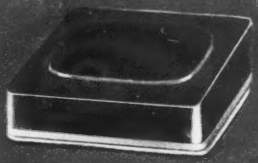
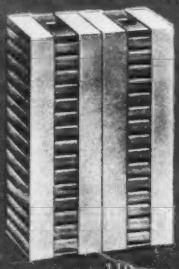


Fig. 7: New space-saving "Mini-Max" battery uses rectangular elements.

Fig. 8: Units are put in plastic and piled, ready for the casing.



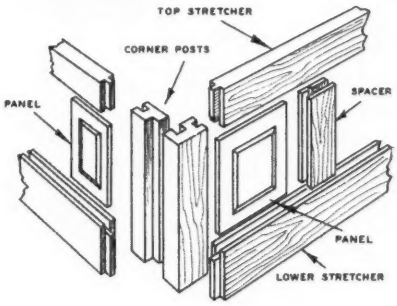
Paneled JEWEL CHEST

By Roland Cueva

CRAFTSMEN who enjoy miniature replica work in true scale will find this chest a worth-while project. It's a 12-inch duplicate of a 48-inch Colonial paneled chest, and is a faithful copy except in one minor detail, a change made intentionally. Because of the one-to-four scale, only a single sliding tray is specified instead of the two in the original.

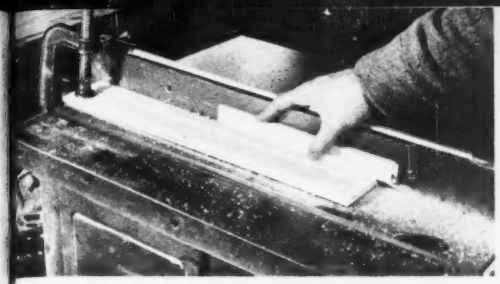
The chest contains 56 separate pieces (not counting the tray, which is hammered from a single sheet of brass), jointed as in the prototype and fitted together without fastenings other than glue. Lombardy poplar was chosen for the framing, while mahogany is used for the panels and trim mouldings. The grain and colors of these two woods contrast very beautifully, and take a fine finish. Despite the number of component parts, construction is not difficult, first, because most of the pieces are duplicated and second, full length rabbets are employed instead of separate mortises, making this work a simple circular saw operation.

Panel framing, base and lid center are of ⅜-in. material, while panels are ¼-in. stock. The pieces can be ripped to the correct thickness, or planed down. Top stretchers, panel separators and corner posts are ¾-in. wide, so by setting the ripping fence for a ⅜-in. cut you can take them from the edge of ¾-in. lumber. When cutting these pieces to length, be sure to allow ⅛ in. extra on each end for tenons (with exception of corner posts, which are not tenoned). The four top stretchers and four bottom stretchers are rabbeted ⅛ in. on one side, exactly on the center line. The eight panel separators are rabbeted on both sides. To accomplish this rabbeting, clamp a piece of thin plywood over the saw blade slot against the ripping fence, which is set ⅛ in. away from the blade. Raise the blade (or lower the table, depending on what type saw you have) with the motor running until the blade comes up through the plywood with ⅛ in. clearance. You can now cut clean, accurate rabbets without danger of the small pieces slipping into the table slot or catching on the soft metal insert.

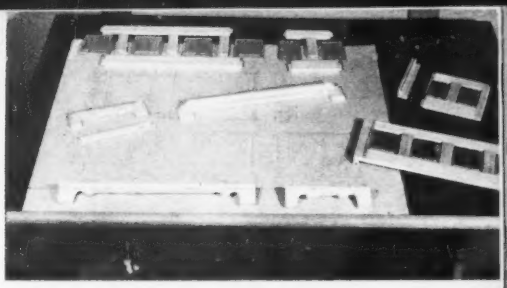


TYPICAL JOINTING DETAIL

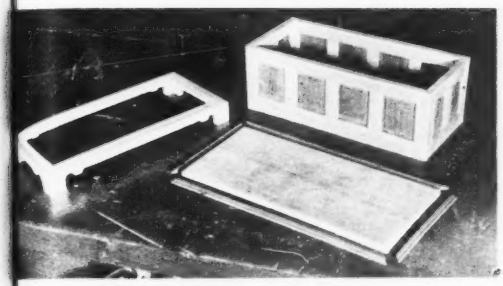
After completing the rabbeting, cut the dado joints on the corner posts, and all tenons. The latter may be done with the mitre gauge set for a straight cut and the blade at ⅛-in. depth. Double check all similar pieces to be sure they are identically paired. Now make [*Continued on page* 140]



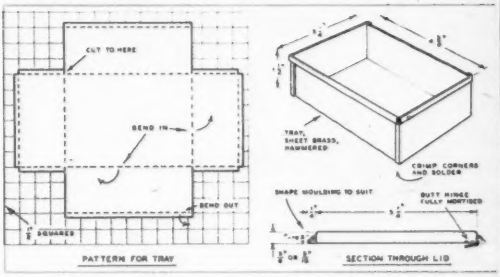
Jig for cutting rabbets. ¼ in. plywood is clamped to saw table against rip fence with blade projecting ⅛ in. Clearance between blade and fence is ⅛ in.



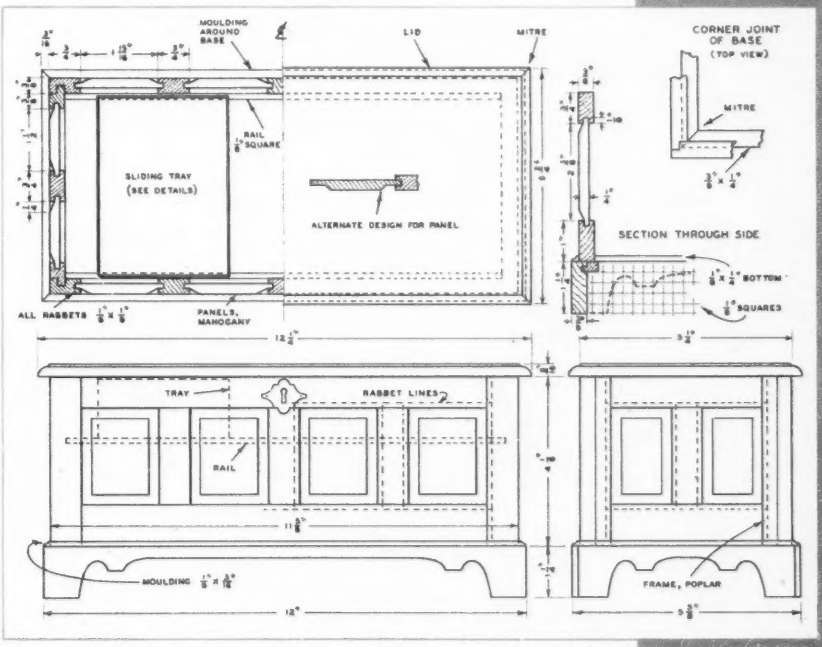
Before starting actual construction, enlarge the drawings on the bottom of the page to full size. Check pieces by laying them over the drawing.



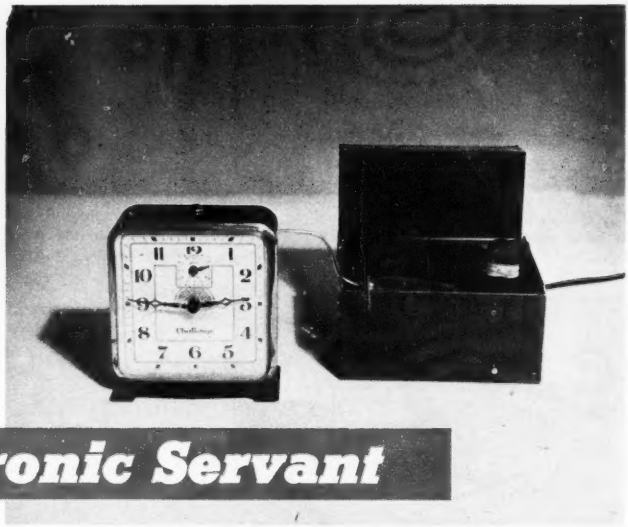
Base, sides and lid ready for assembly. Lid moulding have not yet been glued in place. Original project was made from poplar and mahogany.



Tray is formed from .020 soft brass or copper. Cut to the dimensions shown and solder. Unit slides about a ⅛ in. sq. rail on front and rear walls.



This device, when hooked up to an alarm clock (spring-wound or electric), will turn off or on any electrical appliance at a predetermined time. The entire unit is conveniently housed in a small office file box.

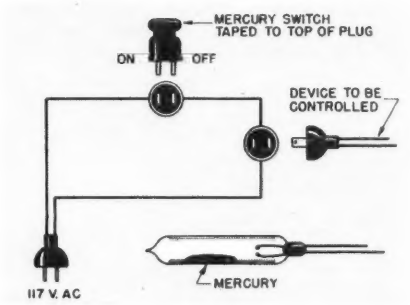


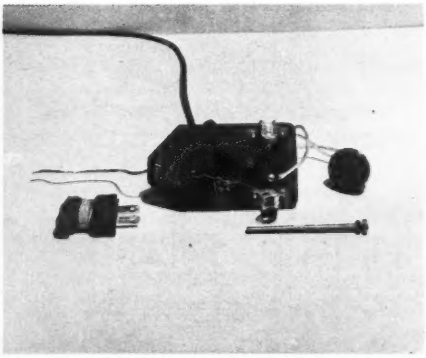
Electronic Servant

HOW would you like to set the coffee going at the same time the alarm clock gets you up in the morning? This apparatus will not only do this but can be used to turn the furnace thermostat on at, say, 5 a. m. so that by the time you get up the house is warm and cozy.

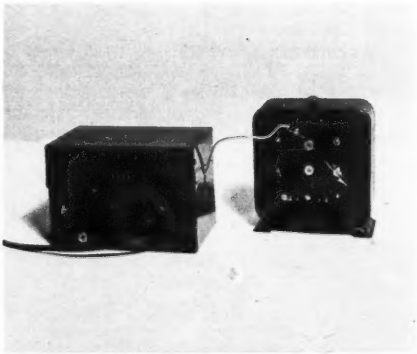
The heart of this gadget is a GE mercury switch which consists of a small glass tube containing a drop of mercury. As it is tilted, it makes or breaks contact with a pair of wires. The switch needs only a 15° tilt to make a positive contact.

—*Clinton E. Clark.*

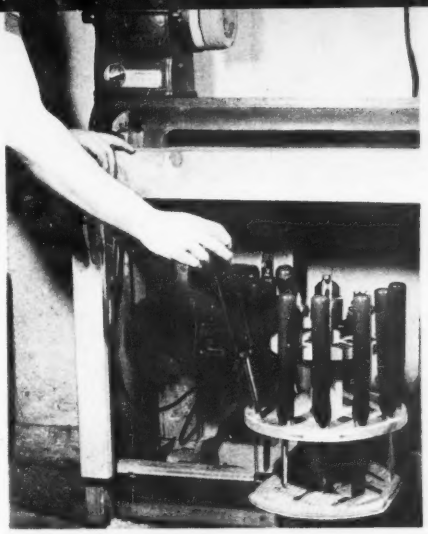


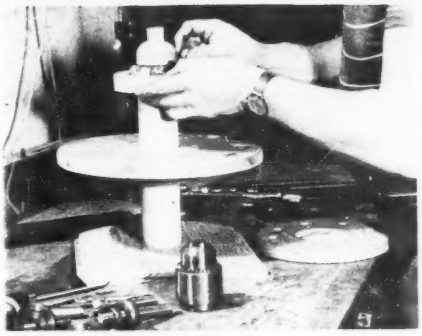


The mercury switch is mounted on a piece of Masonite which pivots on a pair of shade brackets.



The stiff piece of wire from the box is moved by alarm key of the clock, thus tilting the switch.





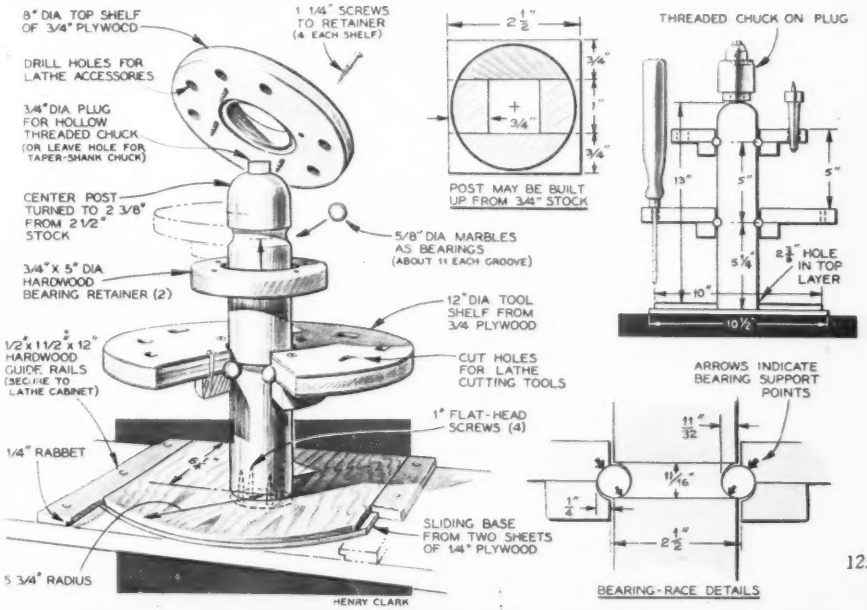
TOOL RACK for your lathe

Ordinary glass marbles are used as bearings in this novel rack.

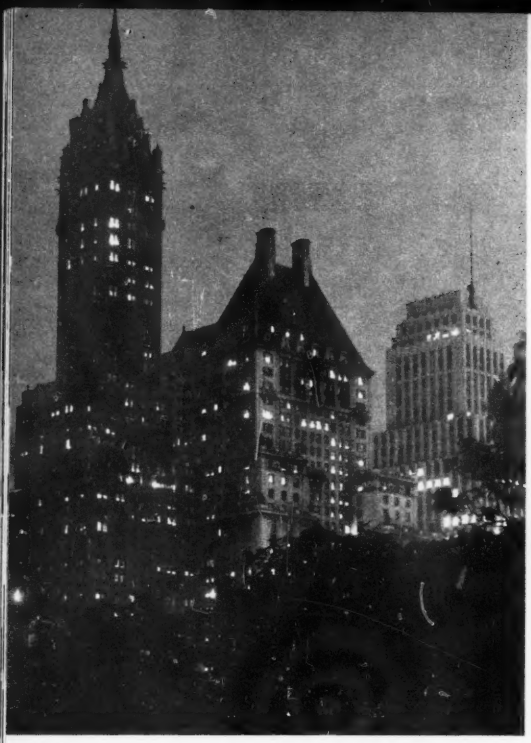
SWITCHING from one cutting tool to another, unless the tools are in a convenient, accessible place, can become an annoyance that takes the fun out of using a lathe. Tools dumped into a drawer or scattered on a shelf are not at hand when wanted, and their keen cutting edges are easily nicked and damaged. All this is overcome by making the rack shown here. The lower shelf holds the usual cutting tools and the upper shelf has spaces for centers, arbors, chuck keys, and so on. A flip of the finger spins the rack for selection of the right accessory for the job of the moment. Mounted below the lathe, it can be pulled out for use or slid back behind a locked door to keep tamperers away.

—*Harrison Neustadt.*

Besides the usual set of eight turning chisels, the lower shelf holds straight and round noses, a rod for removing tapered centers and arbors, and a handy screwdriver for face-plate screws.



Monthly Photo Contest



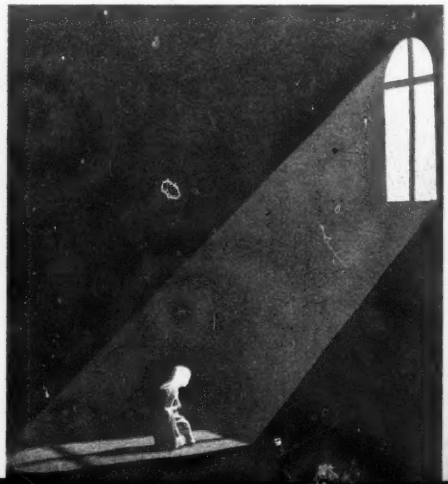
First Prize ($10.00) .....Softly Steals The Night
A 4x5 Speed Graphic shot by J. L. Goldenbaum of Trenton, N. J. Taken on Triple S Pan; Opal paper.

$5.00 Award .....This Is The Life
A Ciroflex photo by James Tracy of San Francisco. Taken in sunlight at 1/100th and f-16.

Please put your name, address and picture-taking data on back of each print. Wrap with cardboard stiffeners and enclose a self-addressed stamped envelope or postage for return of unused photos. Prize-winning pictures are not returned. Judges are MI Editors. Duplicate prizes awarded in case of tie. Please address your entries to: Monthly Photo Contest Editor, MECHANIX ILLUSTRATED, 67 W. 44th Street, New York 18, N. Y.

$5.00 Award .....Silent Strings
Exposed in a Brand view camera at 1/5th and f-22; G filter and pan film. Printed on glossy.

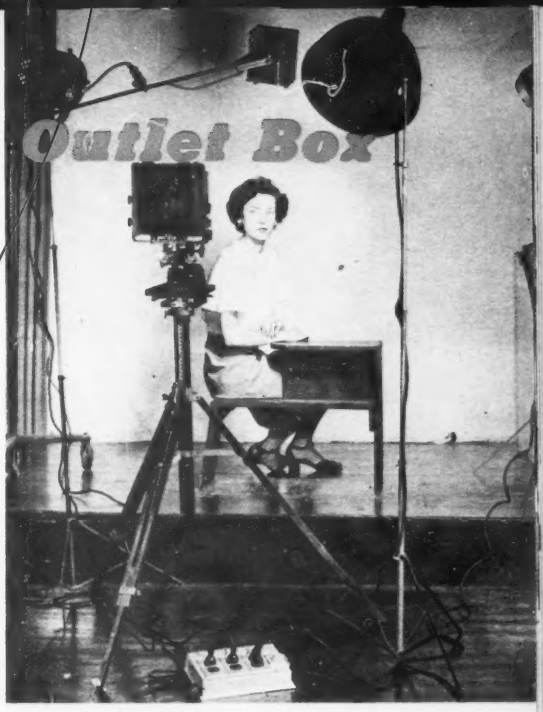
$5.00 Award .....Prayer
Enlarged from a 2¼x2¼ negative by Janet Konkles of Grand Rapids; 8-second time exposure.



Heavy-Duty Outlet Box

A handy device that will enable you to turn your lights off and on from the camera position.

By Phillips St. Claire



Checking effect of different lights on the ground glass of the camera is a cinch when all lights are controlled from one position.

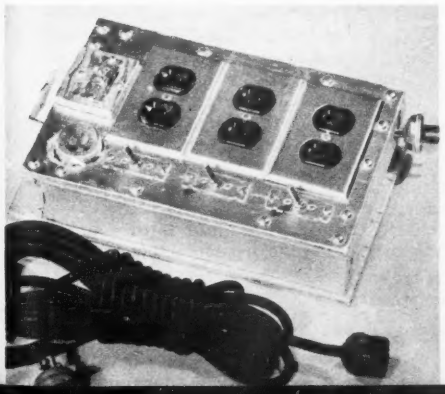
IN a recent article by Phillipe Halsman, famous for his portraits, he states that he achieves his remarkable pictures in a rather novel way. He places a different color gelatin filter over each light and by turning his lights on and off, he can tell exactly the coverage of each light and just what effect each light has on the picture. The average photographer can achieve a similar effect by having a light control panel, or outlet box within reach of the camera, so that he can control all of his lights from the camera position. Thus, by turning your lights on or off and checking the effect in the ground glass, you can readily see what each light is doing for the picture.

The box has six outlets and four on-off switches; one is the master switch which controls all the lights. The other three switches are for the receptacles.

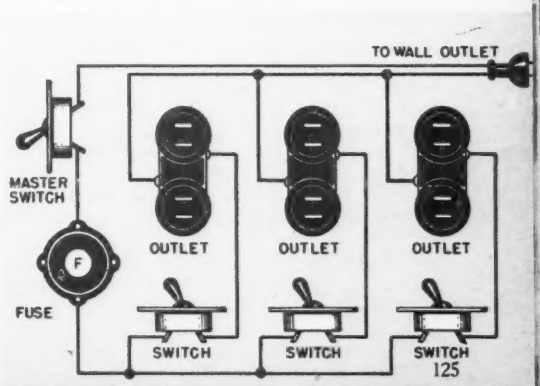
Although this box was made of plywood a metal radio chassis might be more practical. The outlet box should have at least 25 ft. of heavy-duty wire. A male and female connector is advisable to connect the cord to the outlet box.

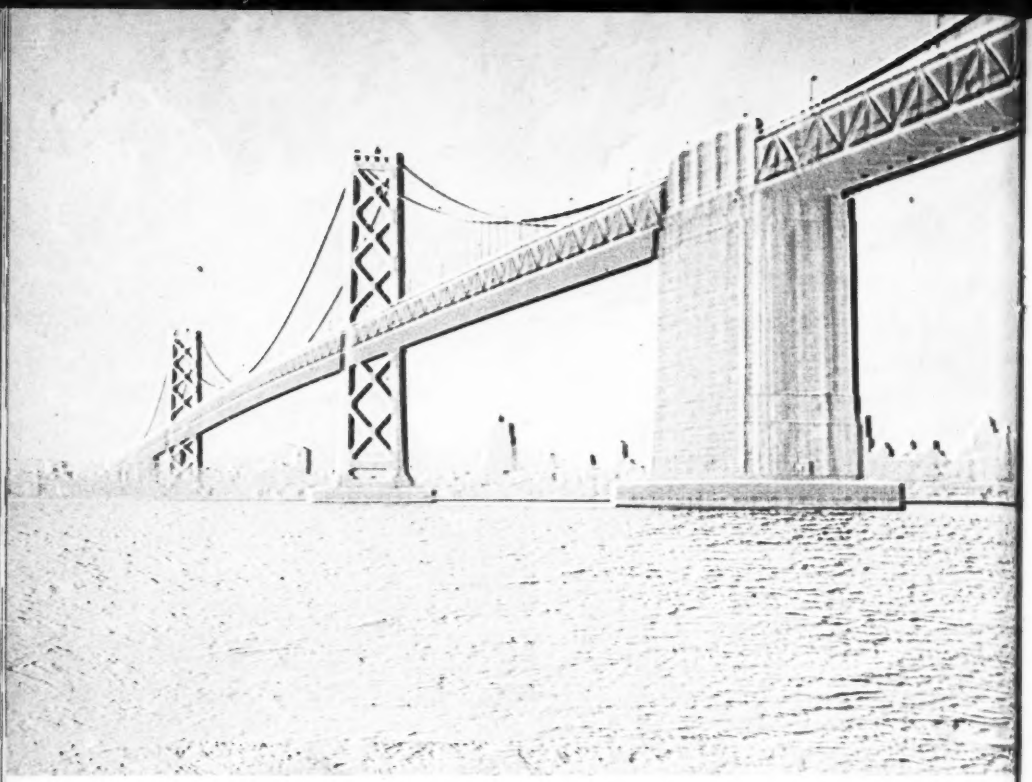
PARTS LIST	APPROX. COST
3 Duplex receptacles	$0.87
3 Duplex receptacle covers	.15
4 Toggle switches	1.16
1 Fuse socket	.15
1 15 amp fuse	.10
1 Male and female connector	.49
1 Metal handle	.10
25 ft. of heavy-duty wire	2.00
TOTAL	$5.02

The receptacles are standard household units. Use a No. 16 gauge extension cord.



Box contains its own fuse. It should be no more than 15 amps so that it will blow before house fuse.





Sculptured Photographs

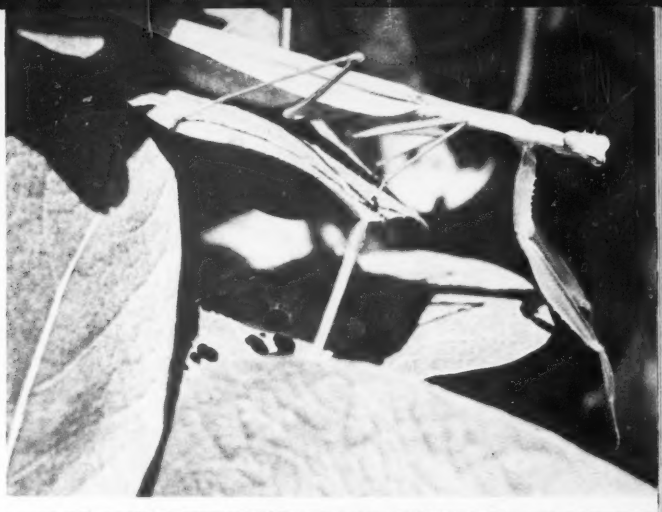
You'll never realize the exquisite beauty that lies dormant in some of your pictures until you try this technique.

By Cornelius Hogenbirk

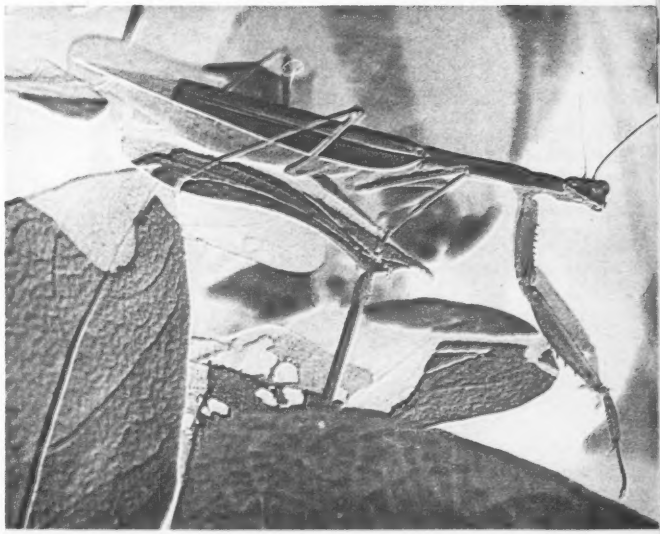
BAS-RELIEF is by no means a new process; yet far too few examples of this interesting technique are seen. Results are often quite unusual. Indeed, there are times when an otherwise ordinary shot, can be transformed into a prize-winning picture. Perhaps few amateurs realize what a simple process it is, and a brief explanation should entice many to try it. Little equipment is required; most of which will be found in the average dark-room.

Certain types of subject matter seem to be especially well adapted to this treatment. These are usually subjects with clearly defined lines, patterns, or masses, such as architectural shots and bridges. Others worthy of trial are portraits, flowers, pattern shots, close-ups, and in fact almost anything that has good separation between light and dark areas. It should prove interesting, perhaps profitable, to do some experimenting with subject matter not usually considered as bas-relief material. An example of this, is the close-up shot of the praying mantis. This, incidentally, has also been printed in reverse tones to emphasize the effect. How this is done will be explained later.

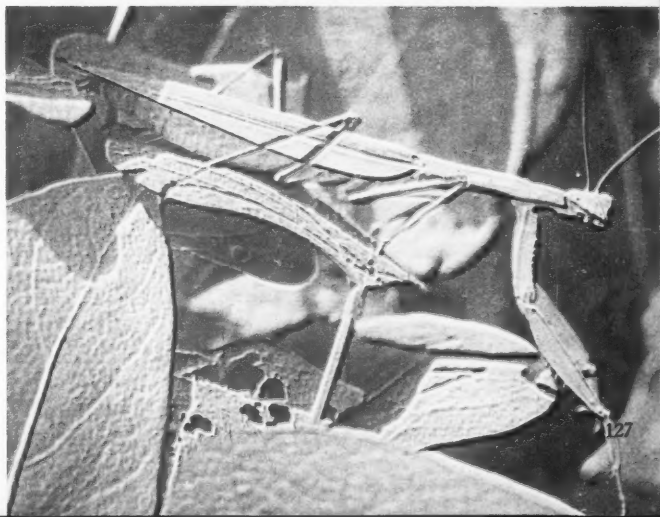
The first thing to be done is to make a transparent positive by contact from each



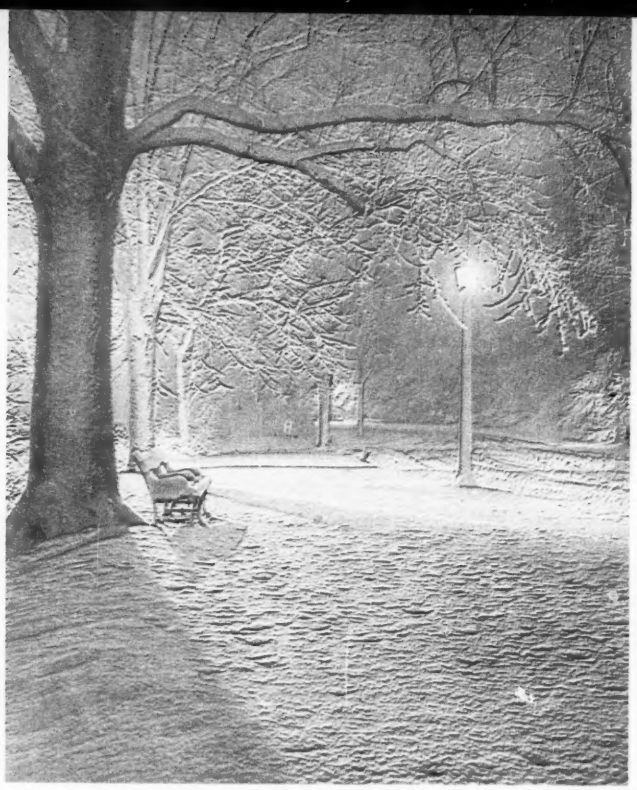
Straight print of a praying mantis. Nothing too exciting about it except from insect's viewpoint.



Here is a bas-relief made with reverse tones using method described in text.

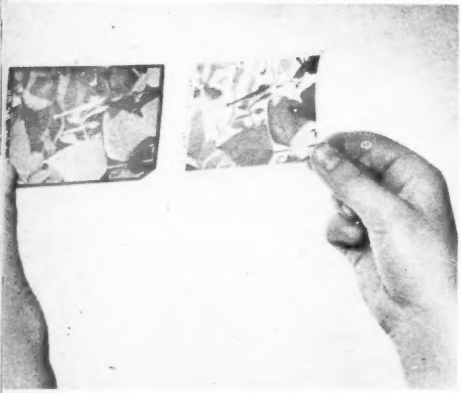


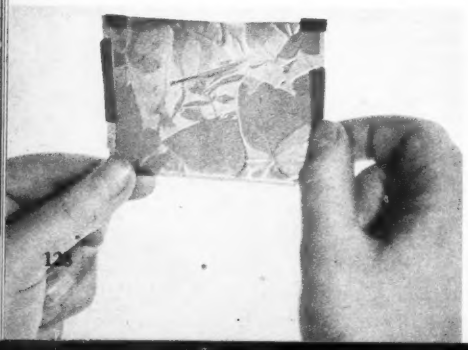
A conventional bas-relief. Such close-ups are not usually considered bas-relief material but they do make unusual studies.



Night scenes make bizarre subjects. Notice how branches appear to be etched into sky.

Below: The positive, in the left hand, just before being placed in contact with the original negative. Photo below shows two pieces of film in contact. They should be taped securely together.





of the selected negatives. Cut film is recommended; it need not be panchromatic. If a printing box is used, take out the regular light bulb, and replace it with one of very low wattage or cover it with several layers of tissue paper.

An exposure of ½ sec. to 2 sec. should do, with the shorter exposure for thin negatives and the longer for heavier negatives. Very dense negatives will not be found suitable for this process. A few experiments will establish a basic exposure for the particular film and equipment you are using. Print emulsion to emulsion.

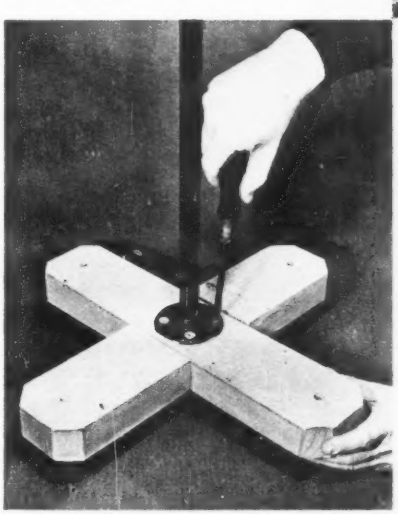
The positives can be developed in your regular developer; aim for under-development rather than the reverse. I under-develop my positives about 20%. Assuming the exposure and development to be correct, the resulting positive will be softer and a bit thinner than the original negative. This is often the key in obtaining good results with bas-reliefs.

After you have produced a satisfactory positive, the next step is to combine it with the original negative. This is done by placing the positive in contact with the negative, emulsion to emulsion, and shifting the two until they are [*Continued on page* 142]

Plumber's Delight Light Stand

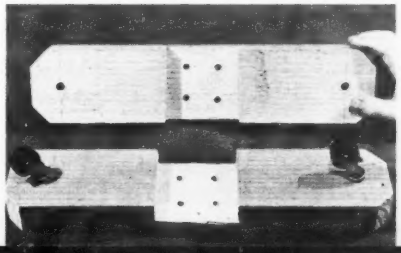
Odds and ends the plumber leaves behind can be made into a sturdy light stand.

By Robert Hertzberg

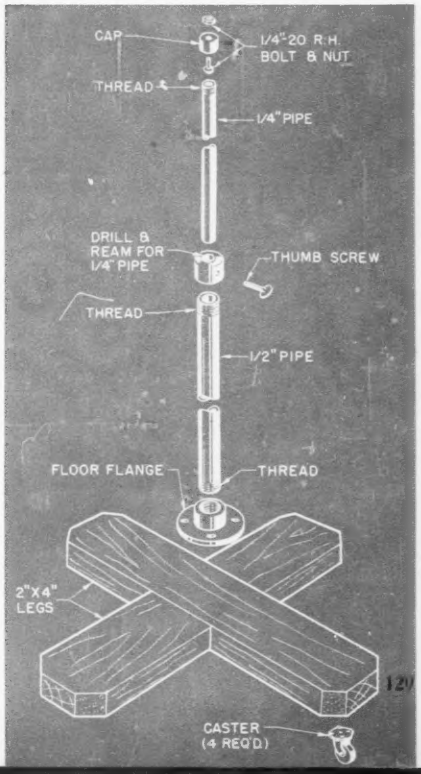


Use 1½ in. flathead screws to pass through the floor flange and into the bottom section of the base. Bevel sides and cut the corners.

Base consists of two 18-in. 2x4's dadoed in the center to make a half-lap joint. The four holes in the ends accept furniture casters.

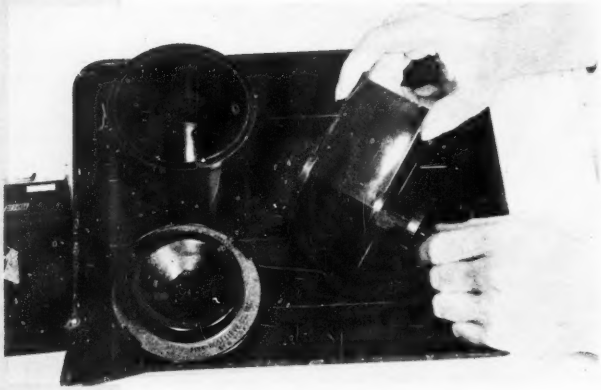


AN INEXPENSIVE light stand suitable for still or movie work can be assembled in about an hour with standard plumbing fittings and pipe. The fixed upright is a 3-ft. length of "half-inch" pipe, the inside diameter of which is just right for "quarter-inch" pipe.

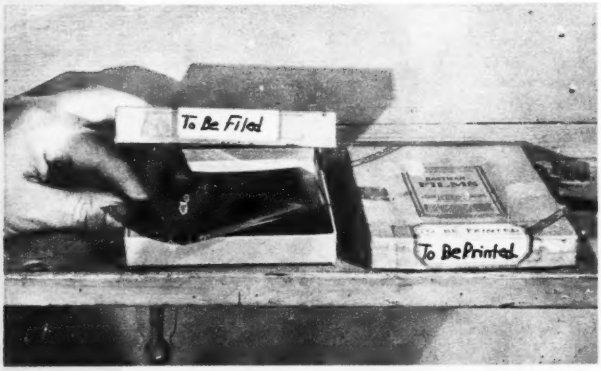


Safe Timer. This one consists of a light-tight box and a 5-watt lamp. Press the switch and apply your eye to the peephole to note the start of the developing time.

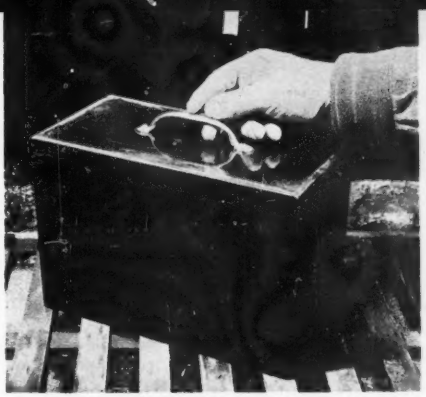
darkroom aids

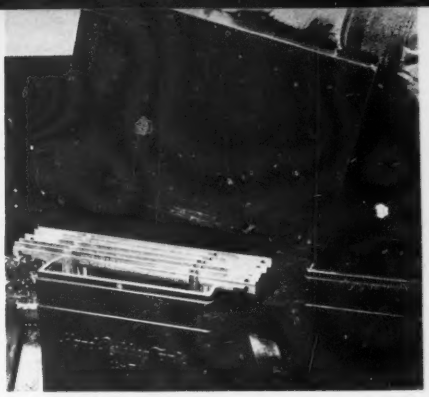


Cut Film Developing. Individual sheets of cut film can be developed in a roll film tank if they are inserted with the emulsion facing the center of the roll film tank.



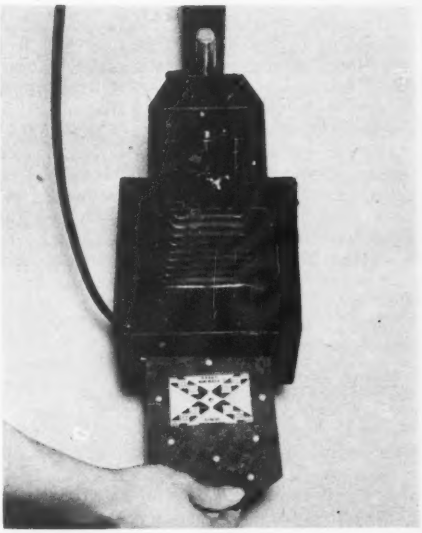
Negative Protector. A two-box system will simplify work in the darkroom. Label them as shown in photo at left with a grease pencil.





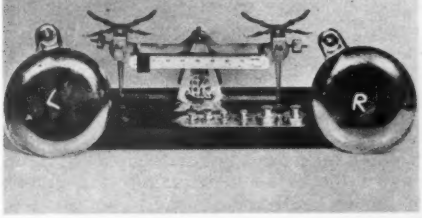
Cut film in hangers can be developed under a fairly bright safelight by making a plywood box to fit over the developing tank. The film is agitated by merely moving the box back and forth by means of the handle.

Accurate focusing with your enlarger is assured if you first check with a focusing chart mounted in duplicate negative carrier.



Sure check for emulsion side of paper is to moisten teeth and bite a corner. Emulsion side of the paper will stick to the teeth.

Scale scoops often vary in weight. To save time in balancing, mark each scoop respectively with an L and R.



Refinishing Floors

[*Continued from page* 95]

colored floor is desired, one coat of stain should be applied before any filler or other finish. A flat varnish brush 3 to 4 in. wide may be used for application. Prepare samples of the required color on pieces of scrap flooring or on the closet floor, where variations in shade will not be noticed. When the desired shade has been achieved, begin in the furthest corner of the room from the door. Care must be taken to be sure that the stain is applied evenly. Excess stain is wiped off with a soft cloth before it has had time to set.

One coat of good quality paste wood filler should be applied after the stain has dried thoroughly. The purpose of wood filler is to fill the minute surface crevices in the wood. By making the surface perfectly smooth, it prevents the top coating of the finish from sinking into the pores, a condition which would cause a comparatively rough finish. For a natural or light-colored floor, use colorless wood filler; for a dark floor, use the colored type. It is generally applied with a short bristled 4 in. brush and is first brushed across the grain then with the grain. Care should be taken to avoid covering too large an area at once. Before the filler in each new area becomes hard, the excess must be wiped off with burlap or excelsior so that the coat of filler is uniformly even with the surface of the wood. The filler then is allowed to dry for 24 hours. Since the filler raises the grain somewhat, the floor should be sanded lightly, with No. 0 sandpaper before another finishing material is applied.

A varnish finish presents a glossy appearance that is durable and resistant to stains and spots. Varnish made especially for floors is preferred, since so-called all-purpose varnishes ordinarily are not durable enough for use on floors. As a rule, three coats of floor varnish are required when it is applied to bare wood. Two coats usually are adequate, when wood filler has been used or when a coat of shellac has been applied first. Cleanliness of both the floor and applicator is essential to a smooth finish. Don't try to work the varnish too much because it dries rather quickly and never attempt to put the varnish on too thickly. A uniform and thin coat hardens best and makes a better base for subsequent coats. After the first coat is on, allow it to dry for 48 hours. Then apply the second and third coats in the same manner.

Shellac makes a beautiful finish when properly used, but one that requires constant attention to keep it in first class condition. The two chief reasons shellac is so widely used are its quick drying property and its ease of application. Starting with floors in the front of your house and shellacking toward the rear, you may begin applying the second coat by the time the first is finished. Shellac that is used on floors should be fresh or be packaged in a glass container. If it remains too long in a metal container, it may accumulate salts of iron, which discolors oak and other hardwoods containing tannin. It should be thinned with denatured alcohol. Usual recommended proportion is 1 quart of thinner to 1 gallon of 5-pound cut shellac. A wide brush that covers the width of three flooring strips is the most effective and convenient size for application. (See Shellac article on page 96—Ed.)

The first coat on bare wood usually will dry in 15 to 20 minutes, after which the floor should be rubbed lightly with steel wool or sandpaper, then swept clean. A second coat then should be applied and allowed to dry 2 to 3 hours.

Floor seal, a relatively new type of finishing material, is being used on an increasingly large scale for residential floors. It differs from other finishes, in that it is not only a surface coating but also penetrates the wood fibers and seals them together. In effect it becomes a part of the wood itself. It wears only as the wood wears, does not chip or scratch and is practically immune to ordinary stains and spots.

Floor seal may be put on with a brush, a squeegee, or a wool applicator. It is applied first across the grain, then with the grain. After a period of 15 minutes to 2 hours, depending upon the specified instructions of the manufacturer, the excess should be wiped off with a clean cloth or a rubber squeegee. For best results the floor should then be buffed with steel wool. A second coat is frequently recommended for new floors or floors that have just been sanded.

Liquid phenolic plastic floor coatings are new but show great promise as a finishing material. Applied in the same manner as varnish, they are acid, water and fireproof. No sealer is necessary with this material but the original cost is still high.

A painted finish is by no means new. It has been in common use for softwood floors since the days when all floors were carpeted. However within the last few years, the trend for painted floors from a decorative standpoint has grown in popularity, because of the possibilities they afford for harmonizing with the walls and furnishings. The floor surface must be clean, dry and perfectly smooth. Ordi-

[*Continued on page* 134]

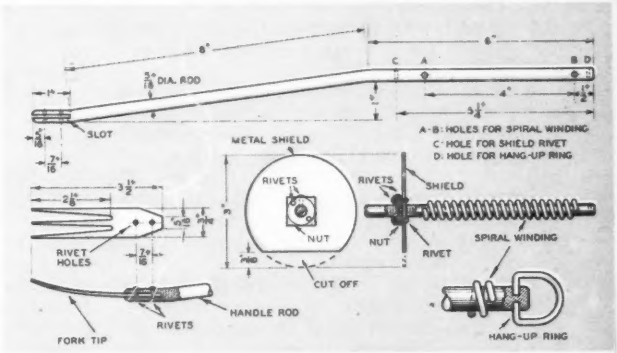
camp fork

Flattened shield of fork prevents it from rolling. Wire-bound handle dissipates heat and thus keeps it cool.

FROM odds and ends you can construct a rugged fork that will come in handy for many kinds of outdoor cooking. With it, you can stir the food in a frying pan or kettle over a blazing fire without any danger of grilling your knuckles at the same time.

The chief features of this fork are the aluminum shield and the wire-bound handle. The wire acts like the heat-dissipating fins on an air-cooled engine and you can be certain of using this fork at all times without any danger of burning your hand.

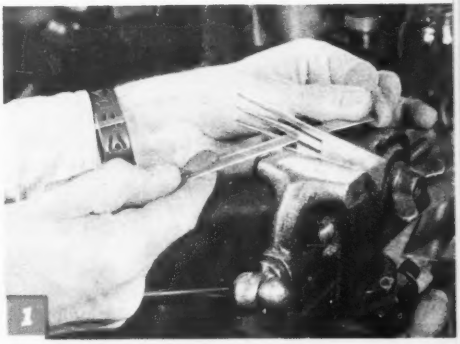
The main part of the fork is made of a piece of steel rod. Shield can be made of aluminum or steel. It should be cut off at bottom to prevent the fork from rolling.—*Walter E. Burton*

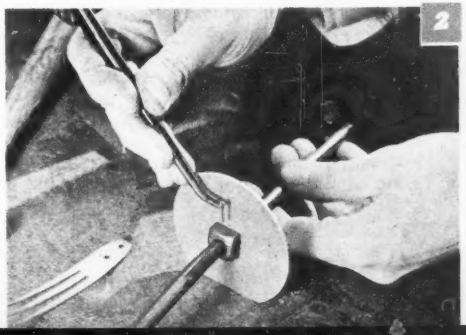


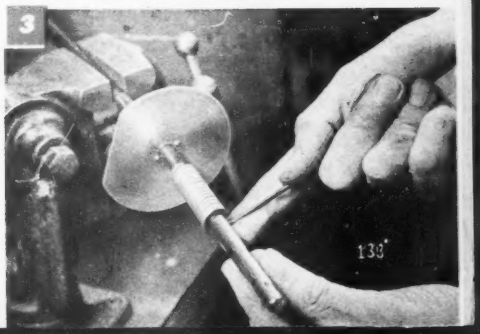
1 After the tines have been cut out with a hack saw, use a fine file to smooth the burrs. Use abrasive cloth for finishing.

2 A cotter pin or rivet is passed through a hole drilled through the nut and handle. Shield is secured to nut by means of two bolts.

3 Cut the hook off a wire coat hanger. Heat it red hot and allow it to cool. It can then be easily wound around the handle of the fork.







How to Use Shellac

[*Continued from page* 98]

tirely dry before applying the fresh shellac.

One unique use for shellac is to seal the resin in pine knots under outside house paint. Apply the material only to the knots and let dry for several hours before applying the first coat of paint.

Many favor shellac as a clear finish on interior woodwork. It is especially good on knotty-pine paneling because it seals the resin in the knots. Where the finish is to be waxed, shellac is excellent because it is not softened by the wax.

It is useful as a wash coat between stain and filler when finishing furniture. For this purpose, use a half-lb. cut. The wash coat prevents the oils and resins in the filler from darkening the wood; thus it keeps the finish light and clear.

It can also be used, at a two or three-lb. cut, as a sealer over the filler. Lacquers and varnishes applied over it won't penetrate and therefore will maintain their fullness and gloss.

Some craftsmen use a two-lb. cut under enamel undercoaters to reduce the number of coats of enamel required for a good finish, especially on softwoods.

A highly specialized use of shellac is for finishing cedar chests. Most other materials are in time softened by the aromatic cedar oil, but shellac can be used directly on the bare wood without danger of this trouble.

When finishing furniture, shellac is often mixed with a nitrocellulose solution called mixing lacquer. The result flows better than shellac, dries faster, and sands and rubs easier. A good mixture is two parts of four to five-lb. cut, one part of mixing lacquer, and three parts of alcohol.

Shellac is often used to protect linoleum and to make wallpaper washable (one to two-lb. cut). It is also sometimes used to seal plaster before painting (three-lb. cut). A good crack filler can be made by stirring wood flour or very fine sawdust into full-body shellac.

Earlier we mentioned the French-polishing and dip-and-rub methods of applying shellac. French polishing is used on fine furniture to build up a smooth, glossy, durable finish. After putting on water stain and allowing it to dry, begin applying shellac. Make a pad of lint-free soft cotton cloth or cheesecloth. Soak it in one-lb. cut and rub lightly over the surface in long, *straight* strokes. Squeeze the pad a little to force out material as needed. Let dry for four to six hours, sandpaper lightly, and apply another coat. Continue in this manner, allowing about one hour between later coats. until the surface begins to build up. Then add a few drops of boiled linseed oil to the pad, dip it in the shellac, and apply several more coats, using *circular* strokes and never allowing the pad to come to a stop on the surface. A smooth, lustrous film will be gradually built up.

The dip-and-rub method is easier and does not require as much skill. After the wood is stained, apply a coat of one-lb. cut, let dry, and sand lightly. Now pour some four-lb. cut into one saucer and some turpentine into another. Dip a clean, soft pad first in the turpentine, then in the shellac. Rub the wood with a rotary motion, covering a small area at a time. Allow to dry and apply about four subsequent coats in the same manner. Let the last coat dry 24 hours and finish by rubbing with a cloth dipped in linseed oil. •

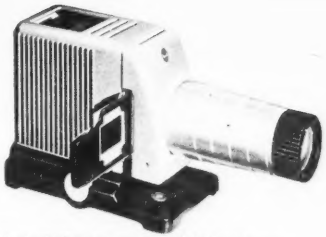
Refinishing Floors

[*Continued from page* 132]

narily, two coats will be sufficient, but where floors are subjected to a great deal of foot traffic, three coats should be used. All coats should be thinned according to manufacture's directions.

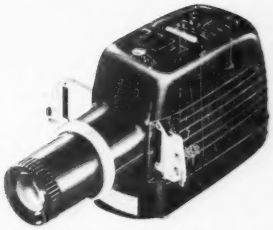
After the final coat of finish has dried thoroughly, the floor should be treated with a good quality of floor wax, since it will protect the finish and preserve its good appearance longer. Generally, the type of wax, paste or liquid, that must be rubbed down after it has been applied gives the best results. The wax coating must be well rubbed out so that only a thin, hardened film remains on the wood. When too much wax has been applied and not rubbed out thoroughly, a film of soft wax remains and makes the floor slippery.

Floors should be kept in good condition by proper daily care. This saves time and is economical in the end, as it avoids the necessity for laborious and expensive refinishing later on and prevents the spoiling of the fine finish through wrong methods of cleaning. Regular waxing of the floor will help to keep it in good condition for a long time. Dirt that has been ground into the surface will usually come off when the floor is rewaxed. Particularly dirty or scratched surfaces can be cleaned with a cloth moistened with turpentine, followed with thorough waxing. Floors should not be washed with soap and water. The water may soak in and raise the wood grain so that the floor becomes rough and will soil much more easily. •

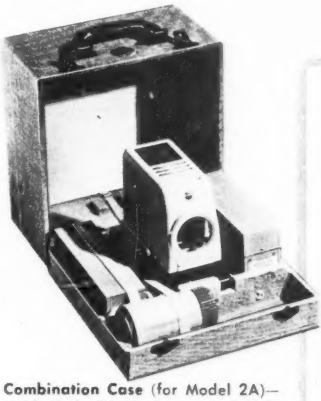


Kodaslide Projector, Model 2A—Lumenized Kodak Ektanon 5-inch f/3.5 Lens. Adjustable tilt control. $47.50.

Kodaslide Projector, Master Model—1000-watt lamp. Superb optical system. $181 to $295, depending on lens choice.



Kodaslide Projector, Model 1A—Projects bright images up to 7 feet wide. Efficient, yet inexpensive. $27.50.



Combination Case (for Model 2A)—Holds Kodaslide Projector, Kodaslide Changer, lens, Kodaslide Sequence Files or Kodaslide File Boxes $15.

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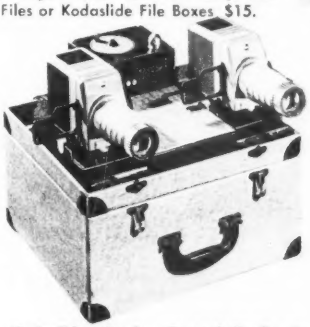

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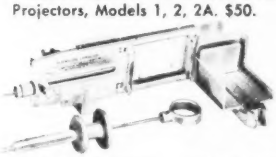

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Dry Batteries

[*Continued from page* 119]

zinc container were not sealed tightly. In some mysterious manner that has never been fully explained, electricity is generated in the battery by the chemical reaction of the zinc can and the pasty mixture, which is called the electrolyte. As current flows through the flashlight lamp or radio tubes, bubbles of hydrogen gas are released inside the mixture and are attracted to the carbon electrode, as indicated in Fig. 2. If the current flow is fairly heavy and is allowed to continue, the carbon becomes heavily coated with this gas, which forms an insulating layer, as shown in Fig. 3. The battery is then said to be "polarized." The production of electricity is reduced considerably and after a while stops completely.

This undesirable action is minimized (not eliminated, mind you, but *minimized*) by manganese dioxide, which is packed around the carbon. The oxygen in this chemical combines with the hydrogen bubbles to form our old friend H_2O, better known as water (Fig. 4). The manganese mix functions as a "depolarizer" and permits the chemical-electrical action to proceed unhindered . . . up to a certain point. This point cannot be defined in specific terms, but in a general way it depends on the size of the battery, the amount of current being taken from it, and the period of service. Even with a brand-new battery, the hydrogen eventually sneaks up on the carbon and cuts off the flow of current. That's what happened in your portable radio when you fell asleep and left it on for several hours. After you turned it off, you gave the depolarizer a chance to catch up with the hydrogen and remove it from the carbon. During the hour or so of the return trip home, the battery recuperated almost completely, and that's why the set worked again.

This brings us to the most vital rule of dry-battery service: *Turn 'em off whenever possible, even if only for a few minutes.* Dry batteries are intended for intermittent use, not for continuous use. You simply cannot turn on a portable radio (or a lantern, flashlight, etc.) at six p. m. and expect to find it working at full volume at 10 p. m. But let the batteries rest and depolarize while the commercials are on and you'll enjoy good reception all night.

As the battery generates electricity, the zinc can dissolves in the sal-ammoniac solution. The inner surface becomes pitted, as shown in Fig. 5, and finally the metal is eaten through. The pasty mixture then usually bursts out. This action is accelerated by heavy current drains on the battery. A short circuit in a flashlight, for instance, will cause the battery to bloat so badly that it has to be chiseled out. Usually, the flashlight itself is ruined by the chemicals. If this accident occurs in a portable radio or a hearing aid, you might be able to salvage the tubes and the knobs, but otherwise the equipment is likely to be a total loss. It is a smart idea, therefore, to disconnect or remove the batteries altogether if you don't expect to use the set for a while.

The more zinc and chemicals put into a cell, the more current can be taken from it and the longer it will last. A small battery should be used only for light, infrequent current drains. Tiny "penlite" batteries will give satisfactory service if you use them several times a week, for seconds only, to look for a doorbell or a lost tie pin. They will expire very quickly if used as part of the ignition system of model airplanes, because the primary of an ignition coil has a low resistance and acts virtually as a dead short circuit on the thin battery. That's why a field is littered with discarded batteries after a model-plane contest is held on it. It is universal practice to start an engine with a couple of husky No. 6 dry cells and to switch to the penlites after the engine fires, but this only delays the fate of the small batteries. The big shift to compression-ignition engines, with or without glow plugs for initial ignition, is one answer to this problem.

Although, again generally speaking, big batteries last longer than small ones because they contain more electricity-producing chemicals, *all* single dry cells develop about 1.5 volts. No one knows why. If higher voltages are required, cells are connected in series. In fact, that's just how radio "B" batteries are made up. (Two sets of batteries are required for all portable radios and hearing aids: the "A" battery, which lights the filaments of the tubes at relatively low voltage and high current, and the "B" battery, a high voltage, low-current job.) A conventional 45-volt "B" battery, as shown in Fig. 6, consists merely of 30 individual cells wired in series. Any desired voltage can be made available by connecting blocks of batteries in series.

The influence of temperature on battery performance is not as fully appreciated as it should be. High temperatures, like heavy current drains, greatly shorten the useful life of a dry cell. Like most chemical actions, the action of the chemicals in batteries is definitely speeded up by heat. Actually, heat increases both the voltage and depolarizing action, but these advantages are more than offset by the decreased life expectancy. Batteries work best at about 70° and start to get hot and bothered

[*Continued on page* 140]

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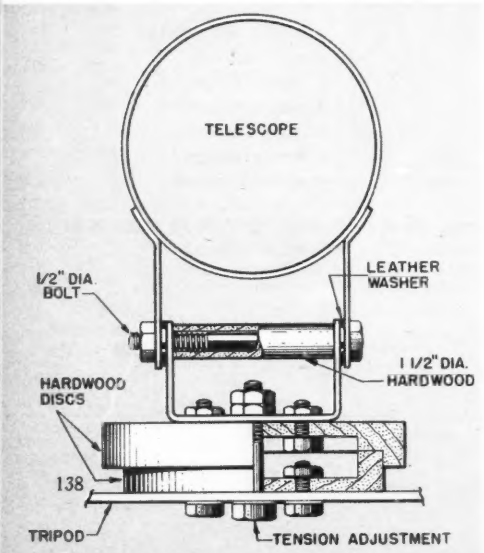
The giant spiral nebula known as Messier 81. Its distance is three million light-years. The central part consists of stars so close together, it is impossible to resolve them. A time exposure made through Mt. Palomar telescope.

Conducted by Robert Brightman

The Amateur Telescope Maker's Page

Herbert S. Roberts of East Braintree, Mass. and his version of M1's Telescope. The mounting consists of heavy pipe buried on 800 pounds of concrete, which is a good way to assure steadiness when observing the stars.



THE sketch at the bottom of this page indicates the method used by Sylvestus B. Burdakin of Elmwood, Connecticut, to achieve an adjustable bearing surface for his alt-azimuth mounting. True, it is a variation of a theme but we think our readers will find it interesting. His letter follows:

"Having finished my telescope, I decided to let you know of a couple of ideas that have proved helpful. Although my mirror did not come out perfect I can use it with good results on the moon. Later I intend to make another mirror, and get it perfect, I hope.

One idea I tried on the full moon was to put a piece of cardboard over the tube, with a hole about the size of a quarter or half-dollar in it. By so doing, I find that I can get a very good view of the craters and mountains. Otherwise the light is too strong and I can see nothing.

My other idea, for making a terrestial telescope without too much trouble, was to use a roof prism. I bought one for a dollar, from the Edmund Salvage Co. It works equally well in observing the moon. Changing prisms is not too much trouble. It makes a two-in-one telescope at a slight extra cost.

To date, I have spent about $32.00 in building my 'scope but that includes a tripod. I also mounted it a little differently than yours. Enclosed is a diagram of the mounting I made."

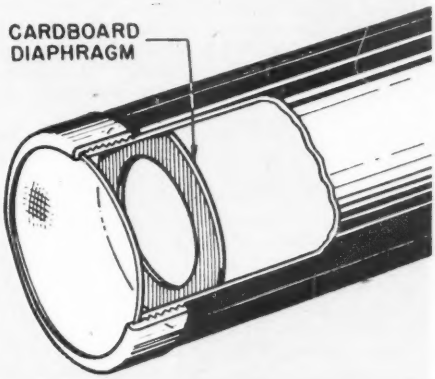
This letter, by Herbert S. Roberts, describes the telescope illustrated at the top of this page:

"It took me 60 hours to grind and polish the mirror. I ground it by keeping one eye on the glass and the other on M1. I shipped it to John Pierce for testing and on the third try it passed.

The tube is made of a war surplus powder case. It is 5 ft. long by 6 in. in diameter and it cost me just $1.00.

This is really a fine instrument. With a quarter-inch eyepiece, it will split the rings of Saturn very clearly. Focused on the moon, the results are just short of amazing.

Carl Davis of Milford Center, Ohio, has come up with a practical means of eliminating the rainbow effect apparent when making a refracting telescope with simple, long-focus lenses. He uses a cardboard diaphragm to mask out all but the center of the lens. The improvement he states is quite "startling." See drawing below.



The three telescopes below are some more of Mr. Roberts' work. The small one is a 5-in. telescope used for observing the sun. The extra large one is an f-12 spherical mirror especially useful for observing the planets and for lunar work.

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Dry Batteries

[*Continued from page* 136]

at about 100°. This isn't nearly as high a temperature as it sounds. If you leave a portable radio exposed to the sun during a summer day and stick a photographic thermometer in the chassis, you'll be astonished at the reading; 110° or 115° is not at all unusual at beaches around New York. The obvious thing to do is to shade the set with a newspaper or a towel.

Resting a battery or cooling it off will not make it recover from heat stroke. The chemicals that have been used up have been used up, and there's no way of replacing them.

At the other extreme, low temperatures affect batteries only temporarily. Cold retards chemical action; so a cold or frozen battery acts like a dead one in that it gives little or no current. It becomes perfectly normal, however, as it warms up. If you use a portable radio to provide music for ice skating, it will surely peter out after an hour or so of exposure, but at least you know that the damage isn't permanent. If you need to use a flashlight outdoors during freezing weather, put it in an inside pocket when it isn't actually in use. Your body heat will keep the batteries up to snuff. The same advice applies to flash guns used with cameras.

In a "B" battery consisting of individual cylindrical cells, as shown in Fig. 6, there is much unused space in the container. Since the main application of "B" batteries in recent years has been in portable radio sets, this extra bulk is objectionable. The round cell has therefore been generally dropped and stacks of flat, square cells are used instead. The basic zinc and carbon electrodes, the electrolyte, and the depolarizer are still employed, but in quite different physical form. Figs. 7 and 8 show the details of the widely used Eveready "Mini-Max" battery, which is representative of all the tiered-and-interlocked styles now on the market.

"Is it possible to rejuvenate or recharge dry cells, somewhat the way a car's storage battery is renewed?" Perhaps you've heard this question or asked it yourself. Most electrical and radio men consider it funny and don't even give it a serious answer, but actually it *is* quite possible and even easy to reverse the chemical action of the zinc plate and the electrolyte by applying current from an outside source. However, because it is difficult to determine the exact condition of a dry battery, the results of this "charging" are uncertain. With flashlight batteries selling for ten cents apiece, and fresh supplies of batteries of all kinds available at low prices everywhere, the operation just isn't worth while. •

Paneled Jewel Chest

[*Continued from page* 120]

the twelve panels. The four edges on one side of each panel are cut as indicated. With a small, extremely sharp chisel or razor blade, bevel the edges of the raised sections to about a 45-degree angle. Now sand all pieces thoroughly and flatly, removing traces of saw marks or other defects. *Do not* sand the inside of rabbets or the tenons. Assemble the pieces experimentally into the four sides of the chest, trimming tenons with a sharp knife where necessary for perfect fitting in the rabbets. If all is fitted properly, the whole thing will stay together by itself. Pull it apart again, keeping the pieces in order, apply glue in rabbets and dados and reassemble, checking corners with a steel square. Clamps may be used if carefully applied but probably won't be needed—just press the assembly gently together with your hands until joints appear tight, then set aside to dry.

The base pieces may now be cut, using a coping saw for the curves. A mitred inner frame is rabbeted in all around for added stiffness, and to support the bottom which will be added later. This frame is at right angles to the outer pieces and flush with them on top. Corners are jointed as shown, and the whole glued up. Here clamps are advisable, and again check with a steel square both before and after tightening them.

Sides can next be placed on the base, centered, and set in glue, leaving a $\frac{3}{16}$-in. base shoulder all around. The top consists of a panel 5¼ x 11¾ in. with a mitred ¼-in. mahogany moulding. This moulding, as well as the one going around the base shoulder, may be shaped to a simple quarter-round or made fancier, as you wish. Attach the top with two small butt hinges, mortised into both top and back. The bottom may be plywood, Masonite or solid stock, either ⅛ in. or ¼ in. thick. Cut it to an exact inside fit and push it down in place on top of the inner base frame, first, of course, applying glue. A neat, planked effect may be obtained by ruling parallel lines on the bottom about ¾ in. apart with an old glass cutter. The tray is made of sheet brass or copper hammered with a ball pein hammer and bent as shown, with corners soldered.

Sand the whole chest carefully after completion with 5/0 garnet paper, softening all edges. The realistic appearance of your chest will depend a great deal on how well this final sanding is done. Finish with four to six coats of pale cabinet rubbing varnish of best quality (this is a short oil varnish and rubs far better than a long oil spar), sanding between coats with 7/0 paper and rub with rottenstone and oil after the last coat. •

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Sculptured Photographs

[Continued from page 128]

in perfect register. Now for the important part. To secure the bas-relief effect, the negative and positive must be shifted slightly out of register. The more out of alignment you move the two films, the greater will be the effect, but too much movement will cause an undesirable appearance. At the start, move the films the least amount required to produce a bas-relief effect. You may shift the films either to the right or left, or up or down. The best results are often obtained by shifting the films in two directions—a little to the right and a trifle upwards. You will find that several different effects can be obtained, depending on the direction and the amount that the films are shifted from each other. Experience will help to determine which will produce the best picture.

When the desired effect is found, tape the edges of the films to keep them in position. That's all there is to it. Print by contact or projection. Naturally, the exposures will be longer than when printing from the negative alone. The negative and positive should be in tight contact. It may be necessary to use two sheets of glass if your negative carrier is one of the dustless types.

Another factor to be considered is the printing contrast. You will find that prints on the same grade of paper used for the negative alone will be somewhat on the flat side. One contrast grade higher will be sufficient in most cases; just use No. 3 paper where you would normally use No. 2.

Should you wish to try something more unusual than the straight bas-relief, try making a bas-relief in reverse tones. This will often produce some unique results, and is accomplished very easily. Just make a second positive, but this time use the superimposed negative and positive, bound out of register, that was used to make the first bas-relief. Use the same procedure that was outlined previously. Increase the exposure about 50%. This time the film should be over-developed slightly. Purpose is to increase contrast so that it may be printed on normal paper.

Now it will be only necessary to print through one piece of film rather than the two required for the straight bas-relief. The illustrations should give you some idea of the novel effect produced. It's pretty difficult to determine beforehand which pictures to print up in this manner. The only way to find out is to try it. In closing I would suggest that the reader use his imagination a bit when searching through his files for bas-relief negatives. •

Knees Are His Fortune

[Continued from page 77]

"If a man writes a better book, or makes a better mousetrap than his neighbor, the world will make a beaten path to his door, though he build his home in the woods." An arrow pointed to Gaskins' home in the swamp.

By trial and error, Gaskins finally developed the process which he uses on cypress knees today. After carefully selecting the knees, he places them in a large metal box where they are steamed. This enables him to peel them more easily. A sharp knife is sufficient for some; but for the more intricate ones Gaskins uses delicate dental tools.

Then he evens up the bases and eliminates the axe marks with his electric saw. Often he cuts the larger knees into three or four smaller objects. After this, they are hollowed out by means of electric drills and long-handled gouges. This is necessary to prevent the surface from cracking as the knee dries.

The knees are kept in the sunshine from three weeks to several months so that they will dry and color. This sun treatment gives the peeled knee a beautiful, bronze-like sun tan. After the knees are thoroughly seasoned, Gaskins' gifted imagination and clever fingers transform them into vases, lamp bases, smoking stands, pipe racks, gun racks, trash baskets, merchandise displays, clock bases, and other such items, about fifty in all.

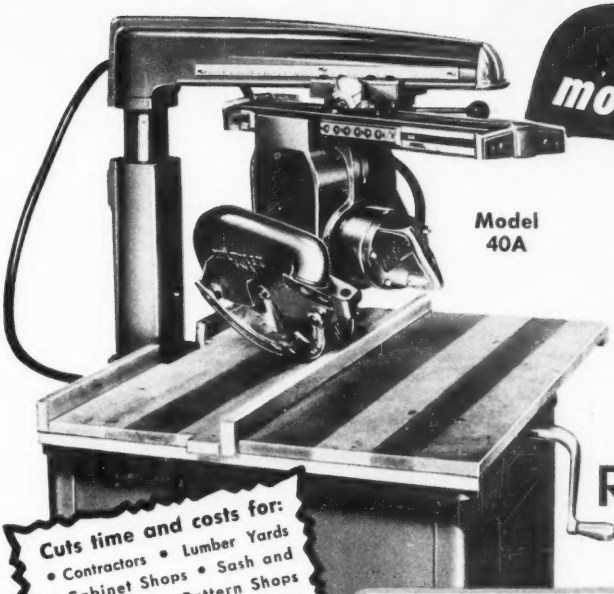
No stain or varnish goes into the finished products, nature taking care of that with a rich stain and wax-like finish which ranges from a light maple to a deep red. Gaskins does no carving or other ornamental work on the knees. He is content merely to uncover nature's exquisite handiwork and display it to its best advantage.

"Nature is the real artist," he says reverently, "I am only her helper."

Gaskins insists that anybody with imagination and a bit of manual skill can accomplish as much in his own environment. If not with cypress knees, he says, it may be with cocoanut shells, corn cobs or sea shells. But, if you look around your own neighborhood you're bound to find great money-making possibilities in simple things.

Gaskins still selects and cuts all of the knees himself while out hunting and fishing. He insists on doing this because he can usually visualize the finished product as he looks at the rough root extension on the ground.

"Why should I go in for more business?" he asks with a smile on his youthful face. "Then I would become a slave to my work. Now I am free to hunt and fish whenever I want to and I make all the money I need merely by doing something I love." •



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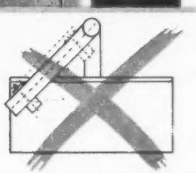

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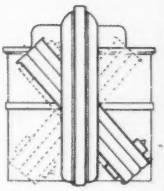

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Spiders Spun Her Career

[*Continued from page* 64]

spider down with a large staple passed over its body—much as a cow is pinned in its stall for milking. The spider's legs also are clamped down to discourage its annoying habit of reaching behind and breaking off the silk strand.

With a dissecting needle, Mrs. Songer tickles the spider's spinnerets until it starts giving out the silk. Next, she attaches the strand to the end of a freshly shellacked rectangular two-by-eight-inch wire frame and carefully winds up the webbing. It takes 54 turns, or nine feet, of web to fill a frame. Mrs. Songer sells this web to her clients for $25 per 100 feet.

An adult spider will produce 100 feet of web at a silking, while younger ones will give only 50 feet. Mrs. Songer can silk her spiders every four days. To prepare her cobwebbers, she feeds them well for two days. Then she takes them away from food for two more days to remove any impurities from their systems and insure clean strands. After yielding around 1000 feet of web, the spiders usually die.

Ordinary spider silk is about one-fifth the diameter of human hair. Because of the web's strength, elasticity and ability to withstand high altitudes and sudden temperature changes, it's ideal for precision optical instruments and allows them to be used on land or sea or in the sky in any part of the world with no variation in their delicate spider-line accuracy.

Fine as the usual strand is, however, Mrs. Songer often gets orders for even finer web. She then goes to the baby spiders for her silking. When thinner strands are needed for the most precise instruments, she splits the baby spiders' silk into strands that are almost invisible to the naked eye. She can, and frequently does, split strands down to 5/100,000ths of an inch. For this microscopic work, she prefers the web of a six-week-old Green Lynx spider.

Her splitting technique is based on the anatomy of the spider's spinning machinery. The silk glands of the spider are clustered like grapes inside the tip of its body. They connect with the spinnerets at the tip. Inside the glands, the silk is in a liquid state. Upon contact with air, this liquid turns into webbing. To split the web, Mrs. Songer keeps snagging at the silk exuding from the spider's body with a dissecting needle until the web separates into more strands. She pulls these apart without breaking.

For web strong enough to use in high-altitude bombers, she twists three to five strands of Black Widow silk into a single strand. For this neat trick, she uses a home-made gadget that weaves the silk together as it exudes from several spiders at the same time.

Each captive spider's strand of silk is attached to a knob on a wheel of her gadget. She rotates the wheel and slowly draws away from her spiders to twine their strands uniformly into a single heavier one.

With each type of instrument demanding a different kind of web, Mrs. Songer must keep at least 50 working spiders on hand at all times. During the summer she works the Green Lynx and Golden Garden spiders. As these adults die in the fall, she uses their young, and the Black Widow spider, for winter work.

Operating costs are practically nil. Mrs. Songer feeds her spiders insects that are plentiful and easy to breed. The bottles she uses as homes for her spiders are discarded food jars covered with cloth. The wooden shipping boxes for packaging the spooled web are expensive, since she had to have them specially designed. Manufacturers, though, return these boxes to her, so that she can use them over and over.

Mrs. Songer makes about $200 a month from her spidery. Some small concerns buy an average of only 100 feet of web a year but larger concerns often buy 400 feet a month.

When there is a shortage of spiders in her plant, Mrs. Songer picks up her field glasses and a supply of small glass jars and goes off into the woods on a spider hunt. When she spots a spider through her binoculars she carefully snares it in a jar.

To feed her brood, Mrs. Songer breeds a mess of fruit flies in a large jar. At feeding time, she pokes a long glass-and-rubber tube through the gauze covering of the jar. With a small rubber hose attached to the other end of the tube, she sucks up some of the flies into the glass tubing. A cotton filter prevents the flies from being sucked into her mouth. She then pokes the glass tube into a spider's jar and blows out the flies—right into the spider's glass-bottle parlor.

At night when moths come beating on her screens trying to fly into the lights, Mrs. Songer is more hospitable than most women. She lets them in—then feeds them to her spiders.

The spider Mrs. Songer invited to "come into her parlor" didn't know what he was letting himself in for. Now Mrs. Songer has hundreds of other spiders in her parlor—all busy getting into shape, so that they can spin her a finer career in cobwebs. •

MI Tests the Buick 40

[*Continued from page* 87]

onds and 0 to 90 in 48.1 seconds. Top speed (actual) is 90 to 92 mph.

After my speed runs I tried the car on 28 per cent grades over rough-rutted roads and around high-speed turns. I drove the 40 for many miles at high speeds. Though outside temperature was about 90 degrees, the car showed no signs of overheating. This Buick handles well under every road condition. And, as you can see by my test times, it is fast.

I have only two beefs about the Buick 40. Beef No. 1: To open the engine hood, you get a gadget similar to an offset screwdriver. You are supposed to keep this key gimmick in your glove compartment whenever it's not in use. This means that to have your oil checked, you must hand the station attendant your batch of keys. If these keys don't get lost by the thousands, just say the word and I'll go lose myself. Of course, you *can* also use a screwdriver but that means your locked car can still have its engine opened from the outside. All in all, this is a minor complaint.

Number 2 on my little beef parade is that trunk. It's much too small for the size of the car. Every time I make a remark like this the manufacturer shouts,

"Why, you're crazy! The trunk has so-and-so many cubic feet of space."

My answer to that: Until we all start carrying around cubic feet, the *shape* of the trunk is what counts. For my moola, Buick made the trunk like Sam made the pants—too small.

This new Buick 40 still is a good automobile —and big and fast. I think Buick will have little trouble selling thousands of them. They are comfortable to sit in and ride. They hold the road well. They look smart. And there's always a top market for Buicks when trade-in time rolls around. If you're in the market for a medium-priced auto, I sincerely recommend: Try the 40. It deserves its name—*Special*. For Buick is really living up to its motto and building a better car. •

Crosley 'Hotshot'

[*Continued from page* 88]

take it for a Cisitalia or even a Ferrari.

Crosley has raised the compression ratio of his engine to 8 to 1. If you want to use the car in road races, you can hop up that ratio to 14 to 1. For such compression, of course, you will have to use gas with a very high octane rating. The engine also sports overhead cams and valving in the best racing tradition. As you know, overhead cams are as usual at Indianapolis as buttons on an overcoat. The

[*Continued on page* 147]

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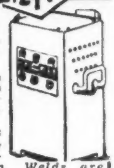

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Crosley 'Hotshot'

[*Continued from page* 145]

engine, in its present standard form, develops 26.5 hp. As the entire rig weighs about 1000 lbs., the engine isn't so small for this midget.

I drove a stripped-down Hotshot hard for over 200 miles on the parkways around New York City and was immensely impressed. At 70 to 72 mph (honest) I found it held the road remarkably well. When I hit turns at high speeds, I was frankly amazed at the little car's cornering ability. The combination coil and leaf-spring suspension could be a lot stiffer for racing. Yet, in spite of this, I hit a lot of right-angle turns at 40 and 50 and I got around 'em in one piece. The short, 83-inch wheelbase, however, can take most of the credit for its cornering characteristics.

The most obvious fault of the new Hotshot, in my opinion, are the 12-inch, baby-carriage wheels—same as those on the older Crosleys. I can't think of a single thing to recommend them. Small tires, because of their limited surface, run far hotter than large ones, 18 or 19 inches in rim size—a definite hazard if you ever race the car over a long course.

Another reason I don't like tiny tires on a car of this type is because it limits the car's usage over rugged terrain. The M.G., for example, with its 19-inch wheels actually is used in England and Africa for open-field races across gulleys, ditches and stump-filled plains. If you tried this with the new Crosley, it would be completely disemboweled in a matter of minutes. The two bucket seats ride only 16 inches above level ground.

The Hotshot is the kind of a small car I would like to take across the fields in the fall hunting. But that would be impossible with 12-inch wheels.

While I'm sawing away at Mr. Crosley's head, I'll get my other two objections over fast, so I can get back to being sweet. The gear-shift handle is too far forward and awkwardly positioned for fast-racing shifts. My other complaint is this: The hatch cover over the engine is secured by a lock anchoring it in the center front. At high speeds this cover vibrates like a Bronxite's tongue "cheering" an umpire. All during my speed tests I thought the darn thing was going to break loose and separate me from my head.

Mr. Crosley, please add to your car's looks and the driver's sense of security by installing a good-looking hood strap in the best road-race tradition. A snappy strap would give your car $500 in extra dash and ease up on the racer's ulcers. Couldn't cost you more than a couple of bucks, per car. You'll be doing everybody a favor, including yourself.

[*Continued on page* 148]

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Crosley 'Hotshot'

[*Continued from page* 147]

Now back to Tom, the fun-loving Rover boy. How would this poor man's M.G. come out in a road race—such as the Bridgehampton clambake or the Watkins Glen Grand Prix—if it were pitted against the real McCoy, a British M.G.? Well, if M.G.'s Harry Rummins or Lea Francis' Dudley Froy were driving Crosley's Hotshots, they'd give any mediocre driver in an M.G. the worst afternoon of his life. The M.G. has a higher top speed by about six miles an hour over the standard Crosley Hotshot. But the Crosley will come close to matching the fancy British sport car in acceleration. I'm not kidding, either.

The M.G. would beat the Crosley's brains out on the corners, but I'll say it again: A Rummins or Froy driving a Hotshot against an average guy in an M.G. would come pretty close to beating the M.G.

From zero to 50 mph with my extra-economy frame, I clocked the Hotshot at 17.6 seconds. But from zero to 60 it took 28.1 or almost ten seconds for the extra ten miles. Zero to 40 took 10.7 seconds. The Crosley has a flat spot in acceleration between 50 and

[*Continued on page* 153]

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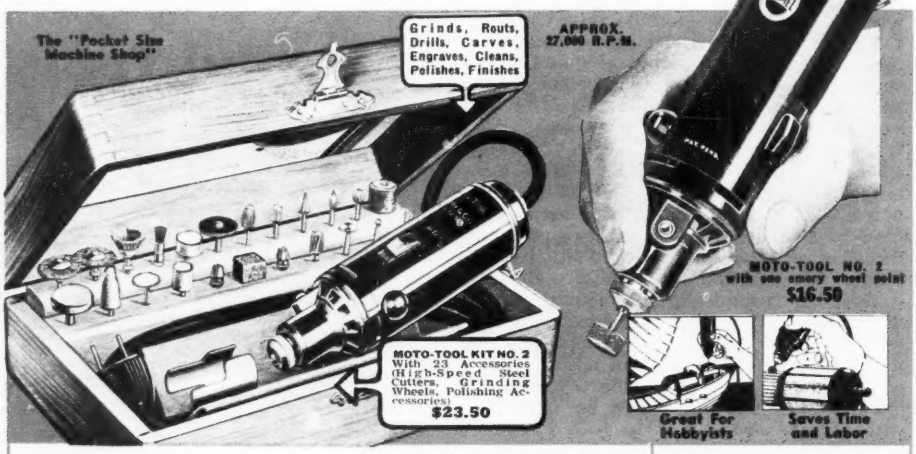

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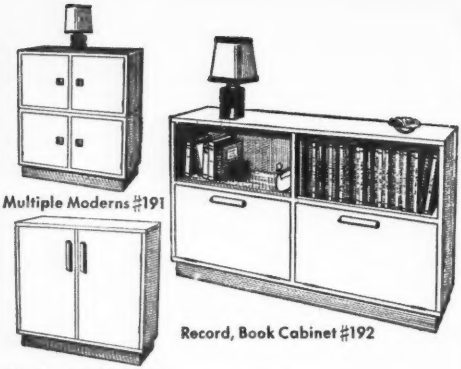

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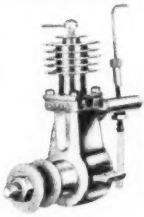

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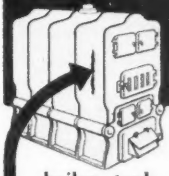

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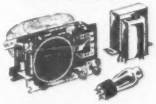

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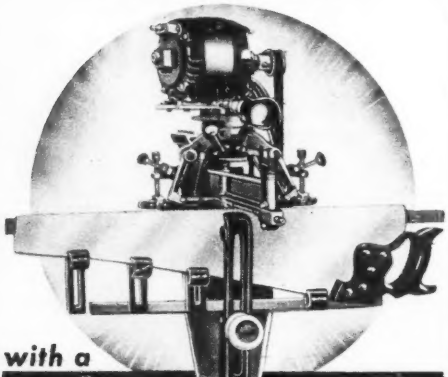

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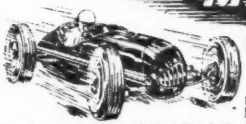

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Crosley 'Hotshot'

[*Continued from page* 148]

60 miles an hour in high. The payoff comes, however, in the time it took me to drive it a half mile from a standing start. This took only 36 seconds flat. I was doing approximately 74 mph at the end of the run.

I made several of these runs and they all were 36.1 seconds; 36.0 and 36.2. In other words, I went from 60 to 74 mph in almost 2 seconds less than from 50 to 60 miles an hour. At Indianapolis in May, the Sports Car Club ran an event which I attended, a race against time, one half-mile from a standing start. I can assure you that several M.G.'s in that race didn't do as well for that distance.

This little Hotshot is scheduled to sell for less than $1000, delivered anywhere in America. It's no M.G. in quality or performance, but, remember, it sells for only about 40 per cent of the price of the English job. In my opinion, the Hotshot's a great little car in which thousands of people are going to have more fun than they have had with a car in years. It's good-looking and sporty—should be a great favorite with anyone having a bit of an old swash buckle tucked away in them. At the price I heartily endorse Crosley's Hotshot for having fun, blowing it up, hopping it up or just planting flowers. After all, on the market today, it's the cheapest production-line form of transportation sporting four wheels. And that, brother, means something these days. •

SPECIFICATIONS

MODEL TESTED:
Crosley "Hotshot," roadster-racer.

ENGINE:
Four-cylinder, overhead camshaft, 44 cu. in. displacement, cast-iron block, 26.5 hp, with 8-to-1 compression ratio.

DIMENSIONS:
Wheelbase 83 in., overall length 145 in., overall width 51 in., tread 40 in. front and rear.

WEIGHT:
1000 lb. stripped, 1104 lb. with accessories.

PERFORMANCE FIGURES:
0 to 40 mph—10.7 sec.
0 to 50 mph—17.6 sec.
0 to 60 mph—28.1 sec.
Half mile, from standing start, 36. Top speed, 74 mph.

SPEEDOMETER ERROR:
60 mph speedometer reading—actual speed 59.60—equals 0.4 mph error.

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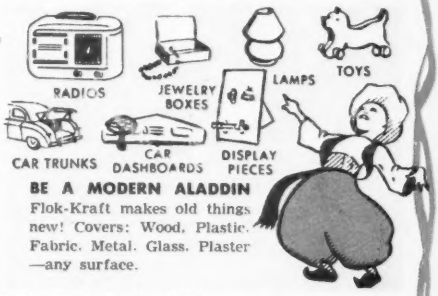

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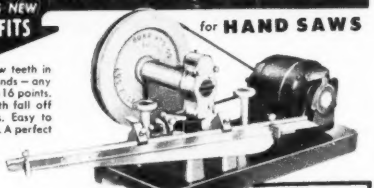

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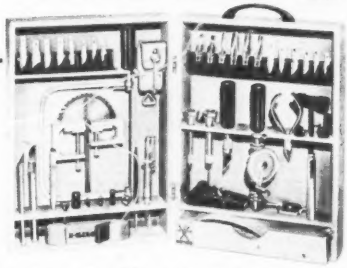

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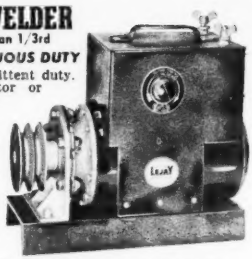

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Lobbyist for Hobbyists

[*Continued from page* 81]

"These goemetrical soap bubbles, Mr. Elman, serve a very good purpose," Block told Dave before the mike. "They're used to test the explosive quality of gases. In laboratories they fill a soap bubble with gas, light it, and it explodes. If they used glass, it would shatter and that would be dangerous. But no one has ever been injured by a bursting soap bubble."

Sometimes Dave comes across a man whose hobby is his fellowman. Such a hobbyist is Admiral Richard E. Byrd, the noted polar explorer. He appeared on Dave's program to explain why he, an Admiral of the Navy, made a hobby of promoting world peace.

During his second Antarctic expedition, Byrd was alone for six months at the world's most southerly outpost. There in the loneliness and darkness of the polar night he was poisoned by the fumes from a faulty stove. Death seemed inevitable as he lay helpless in his tiny shack beneath the snow. He thought of the world and its many troubles. He became convinced that war was the greatest folly of mankind. He solemnly resolved that if he lived through this ordeal he would devote all his energy to the cause of peace.

"When the great masses of the people of the world fully comprehend why another general war would end our civilization," Admiral Byrd declared on Hobby Lobby, "I believe they will do something about it . . . the people of the world are 200 to 1 against war . . . the force for peace is the greatest force in the world . . . no nation can for long stand the unified condemnation of the world . . . From a practical standpoint, no nation could afford to be put into coventry by the world . . . . And it can be done without bloodshed."

But even with Dave's best lobbying for the peace-loving Admiral, he couldn't put over his hobby. For that program took place more than ten years ago—on the brink of World War II.

Dave keeps on encouraging hobbyists, though, whether they are idealists like the Admiral or practical gagsters like the inventor of the pants-puller-upper. He even encourages his own personal pastimes whenever he gets a chance—fishing for marlin in the deep sea, or trout in the lakes—or playing around with photography. Last year he helped the neighborhood kids in St. Albans, Long Island, become sharp shutterbugs and junior geniuses in the darkroom. Dave's *real* hobby, however, is neither fishing nor photography but playing lobbyist for other people's hobbies. As the signature on his broadcast puts it:

"Hello . . . Who? Hobby Lobby? It's for you, ladies and gentlemen—it's for you!" •

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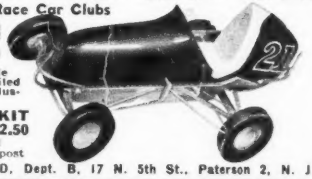

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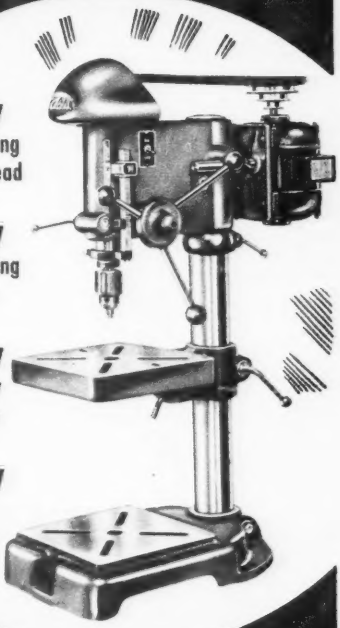

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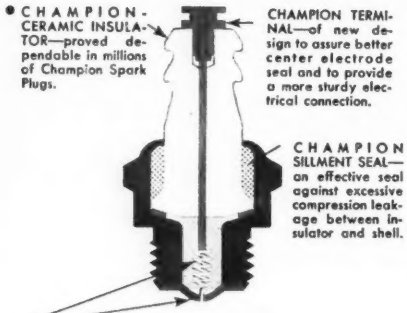

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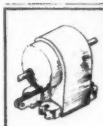

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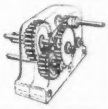

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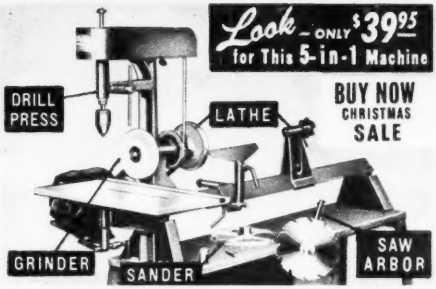

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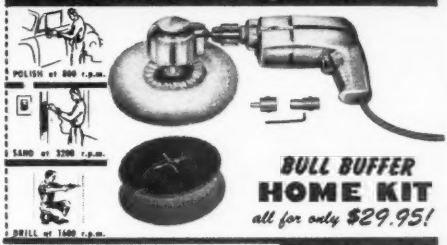

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There's a **right speed** for polishing, for sanding, for drilling, if you're going to do a **professional** job. And now, for the first time, here's a kit that offers you a **choice of 3 speeds** so you can pick the right speed for any job!

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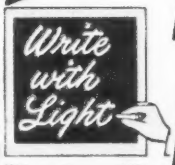

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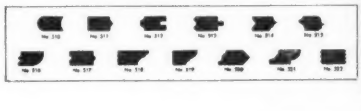

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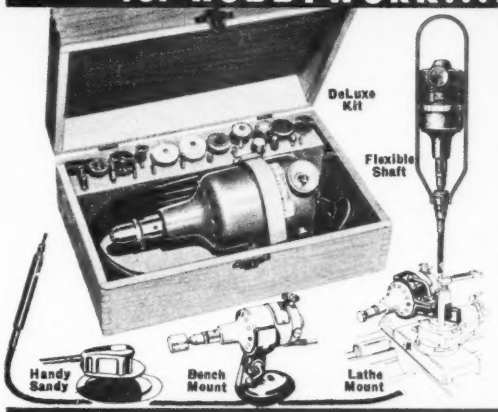

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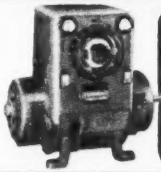

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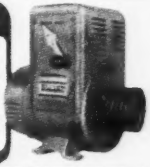

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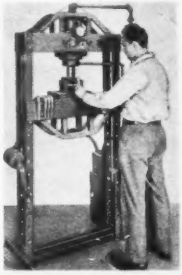

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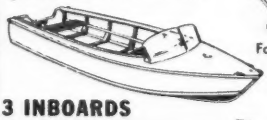

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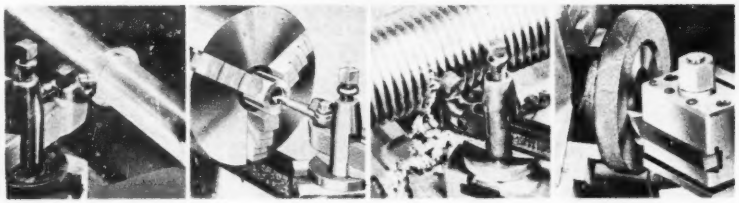

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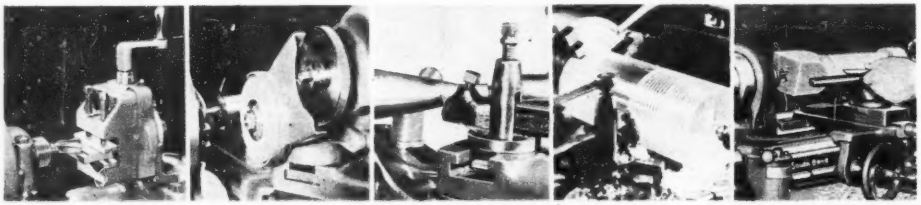

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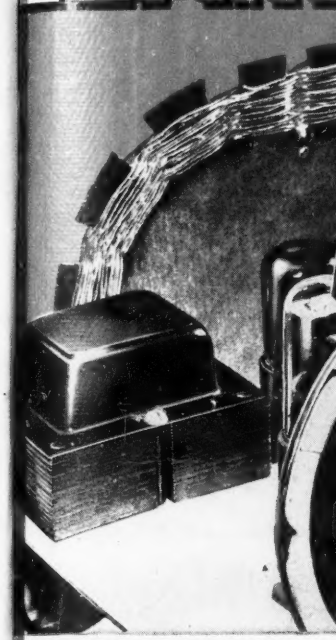

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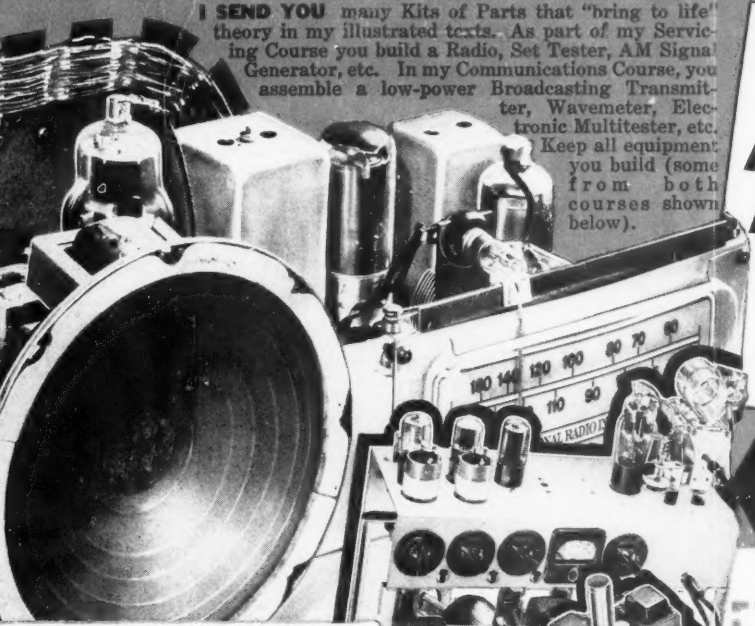

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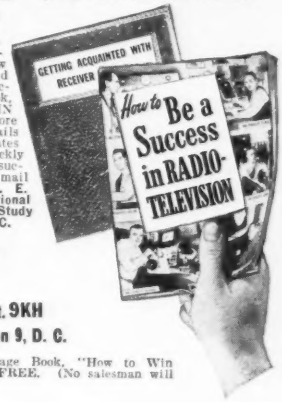

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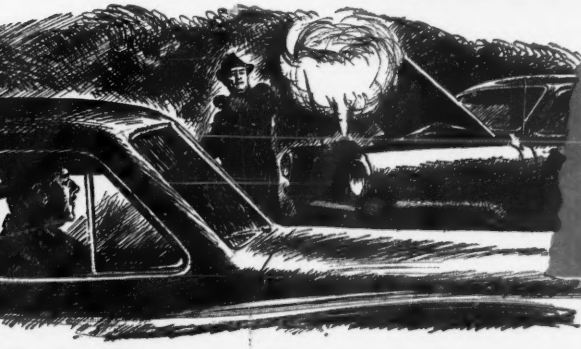

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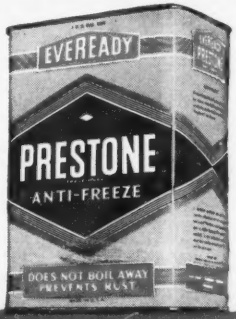

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